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PLANNING FOR A PERMANENT AGRICULTURE

INCLUDING *a Summary of the Programs Administered by the Department of Agriculture that Influence the Use of the Land*

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Planning for a Permanent Agriculture

Including a Summary of the Programs Administered by the Department of Agriculture that Influence the Use of the Land

Prepared for community and county land use program planning committees

MISCELLANEOUS PUBLICATION 351

UNITED STATES DEPARTMENT OF AGRICULTURE

Issued June 1939

FOR SALE BY THE

SUPERINTENDENT OF DOCUMENTS, WASHINGTON, D. C.

PRICE 15 CENTS

Contents

Part I

Page

PROGRAM MAKING BY FARMERS 1
The Mount Weather Agreement 3
Reorganization of the Department 5
Why Farmers Should Take Part in Planning 7

Part II

GROWTH OF FEDERAL RESPONSIBILITY 11
The Response of Government 16

Part III

THE NATIONAL FARM PROGRAMS 19
Agricultural Conservation Programs 20
The Ever-Normal Granary Program 24
Stabilization efforts 25
Commodity loans 26
Marketing quotas 27
Crop insurance 29
Additional features 30
The Sugar Program 30
The Rehabilitation Program 31
The Farm-Tenancy Program 33
Direct Relief to Farmers 34
Soil Conservation Operations 35
Erosion-control demonstrations 36
Cooperation with soil conservation districts 38
Purchase and Development of Submarginal Lands 40
Water-Facilities Program for the West 44
The Public Forests 47
Aids to Commercial Forest Owners 53
Farm-Forestry Programs 59
Land Treatment for Flood Control 62
Wildlife Refuges 64
Road Building and Land Use 68

Part I PLANNING FOR A PERMANENT AGRICULTURE

Program Making by Farmers

It became necessary a few years ago to begin building new land and agricultural policies for the United States. It had become clear that something more than individual action, research, and education in the older sense was needed for dealing successfully with the farm problems of the Nation. The old policies in a changed situation failed to meet the needs of the times. The closing of the frontiers, the rise of nationalism throughout the world, the loss of much of our foreign market, the advance of machine agriculture, the ruthless waste of resources over a long period of expansion and exploitation, the sudden shrinkage of opportunities in the cities for the surplus population that formerly flowed away from the land—the development of all of these factors, and others, coinciding, led to a situation that called for immediate action of a new kind.

Some of the responsibility for developing new policies falls upon the Federal Government, some falls on the States, and a share falls upon farmers and other individuals.

In response to public demand the Congress and the State legislatures began spelling out new policies in a series of laws authorizing new kinds of farm programs.

The Congress passed more than a dozen major farm laws and a number of minor ones in the period since 1933. The laws authorizing new national farm programs were aimed largely at raising

prices and income and reestablishing a balance between farming and industry. It was quite proper that considerations of income should overshadow all others. To remove in an orderly manner the immediate causes of low farm income—the price-depressing surpluses—was a necessary first step toward a greater degree of stability in an excessively unstable situation. But while the Congress realized that the income problem was the most important one troubling agriculture, it recognized that there were others which had their roots buried deep in agricultural policies, attitudes, and practices bred and nourished in a day when land was plentiful, cheap, and easily obtained; consequently the Congress provided for programs that would make other fundamental readjustments in agriculture.

Legislation by the States also created important instruments for improving rural life. Several States passed rural zoning laws that seek to guide settlement in the right direction. One State is attempting to cope with its tenancy situation through legislation defining tenant rights and calling for the improvement of the lease-contract system. Several States are revising their tax laws and policies in order to base assessments on the productive value of the land and to provide inducements, through incentive taxation, for putting land to its best long-time use. Some States are studying and revising their basic laws governing water use, so that use of water may more closely conform to the right use of land. In the Western States legislation encouraging the development of cooperative grazing associations is helping to bring stability to the range-livestock industry, providing one more instrument that local groups may employ to conserve range resources. The popularity of soil conservation districts legislation is perhaps the most significant development of all. Almost 30 States have passed soil conservation laws that provide for the creation of districts to engage, under local initiative and guidance, in attacking the various local land problems in a throoughly democratic way.

Each of these various programs, whether authorized by Federal or State law, is designed to help farmers deal with a given segment

of a common problem. Altogether they represent the public farm policies of the United States.

The greatest single fact that must be considered by those who are charged with formulating and managing public farm programs is their dependence on each other and on the success of nonfarm programs. None of the public programs stands alone. The activities of none of the action agencies of the Department of Agriculture, for example, may be considered apart from those of other action agencies. What is done in a community under one program inevitably influences the course that other programs should take in that community. Therefore, if the farm program as a whole is to go forward smoothly, each part, whether authorized by Federal or State statute, must be carefully coordinated with its fellows.

The Department of Agriculture has found that true coordination begins deep down in the fact-finding and planning processes. If the fact-finding and planning processes are unified we can make certain that all parts of a total program fit together to form a well-rounded whole. Coordination of the action phases of the programs then becomes less difficult.

If the planning for public farm policies and programs is to be successful, specialists and farmers must do it together. Farmers, as well as technical experts, must take part in both the fact-finding and planning processes. Farmers must make decisions, on the bais of their own experiences and the information supplied them by specialists; and they must help plan both the short-time and the long-time application of the public farm programs if such programs are to meet the needs of the local communities.

The Mount Weather Agreement

But how can we bring the technical experts and the farmers together so that they may pool their information and arrive at common judgments in order to guide the various public programs properly? How can farmers make the fullest use of these public programs in solving their own farm management problems?

For almost 5 years the Department of Agriculture and the agri-

cultural colleges and experiment stations have wrestled with these two questions. They decided new planning procedures were clearly needed to answer them. As an outcome of their efforts they agreed in the summer of 1938 on a method of program planning that promises to assure that farmers will have greater voice in planning the application of public programs to their local situations. They subscribed to an understanding known as the Mount Weather agreement. Under this agreement the land-grant colleges and the Department will cooperate in helping farmers to establish program-planning procedures.

It was agreed at the Mount Weather meeting that the Department and the land-grant colleges, through the extension services, should help farmers to set up community and county-agricultural land-use planning committees in each county. Since practically all of the national and State programs of action seek to influence, directly or indirectly, the use of land, land-use planning seemed a logical point at which to begin the community planning effort.

The part that is to be played by the local planning committees is the heart of the agreement. These groups will study local farm problems, and then, in the light of their findings, develop for their areas sound land use plans that will guide the several national programs into a unified program best suited to promoting the specific agricultural adjustments needed in their communities.

Since national public farm programs are involved, official representatives as well as farmers must take part in this planning work. The Mount Weather agreement suggested that the county committee might well consist of about 10 farm people, a few forest-land owners where forestry is a problem, the county agent, at least 1 member of the local A. A. A. administrative committee, the rural rehabilitation supervisor, and any other State or Federal official in the county who is responsible for the administration of a local land-use program—such as a Soil Conservation Service project supervisor. Farmer members will be in substantial majority. The chairman will be a farmer. The county agent, if the group desires, may serve as executive officer or secretary.

Then in each State the extension services agreed to aid in estab-

lishing a State agricultural land-use program or policy committee. This committee would assemble the plans, draw from them a land-use program for the State, and submit recommendations to the Department of Agriculture.

Thus, the planning that is done locally will directly influence, within the framework of the acts of Congress, both the design of the national programs and the design of local programs.

The director of the State extension service will serve as the chairman of the State land-use planning committee. Its membership will include the director of the State experiment station, the chairman of the State A. A. A. committee, State coordinator of the Soil Conservation Service, State director of the Farm Security Administration, the State planning representative of the Bureau of Agricultural Economics, a representative of the Forest Service, and other State and Department representatives who administer public land use programs, and a number of farm people, at least one from each type-of-farming area within the State. The farm men and women, preferably, should also be members of one of the county agricultural land use planning committees.

Reorganization of the Department

There is no virtue in planning merely for the sake of planning. Unless plans can be translated into action, planning becomes only a profitless mental exercise. It is not reasonable to suppose that farmers would continue to render volunteer public service, as members of planning committees, if they could not see the influence of their work on the conduct of the public programs.

In the past it has been hard for local groups to make themselves heard in the Department of Agriculture, chiefly because planning within the Department itself was widely diffused. Each bureau in charge of an action program did its own planning, often without sufficient integration with the planning done elsewhere in the Department to further other segments of the general farm program. As a result, various parts of the national farm program sometimes seemed, to the man on the land, to be working at cross-purposes.

The cause lay partly in the organization of the Department.

Prior to 1933 the Department had been an agency engaged principally in research and education, with responsibility for administering a part of the public lands and some of the regulatory work of the Government. At this job it had earned a reputation for efficiency. Its organization had been carefully planned to perform these services. When new agencies were created and old ones were expanded after 1933 to meet the new demands on government, it was found that the type of organization that had proved useful before was not the best for the new tasks. The Department had not been organized as an agency to carry vast action programs to the farms of the Nation.

As each new program was added, problems of administration grew.

In authorizing national programs the Congress defines their scope, basic policies, and objectives. The Congress also indicates in a general way what the procedures of administration shall be. In most of its mandates to the Department of Agriculture the Congress directed the Secretary of Agriculture to use the resources at his command in the most practical way to reach the ends sought.

Under the then-existing organization of the Department, the new public programs were necessarily placed in charge of many agencies, and each agency did its own planning. This would not have given rise to difficulties had the programs been independent of each other. But they were far from being so. Reports of conflicting efforts reached the Department from the farms, where lack of coordination is immediately felt. But the old organization was such that adjustments could not be made quickly. Among administrators there arose a general appreciation of the need for a central planning agency. Therefore, one of the primary purposes of reorganizing the Department [1] was to create such an agency. This was the Department's answer to the demands made upon it by the Mount Weather agreement.

The Bureau of Agricultural Economics was designated as the central planning agency. This Bureau will prepare all over-all plans for the national farm programs of action, and thus remove

[1] Ordered by Secretary Wallace October 6, 1938.

the causes of conflict; it, in effect, becomes an ear through which local people may make themselves heard. It will handle and correlate all plans for programs that come from the field. In addition the Bureau will continue to serve as the economic fact-finding agency for the Department.

The reorganization reduces the number of agencies with which operators of privately owned lands must deal. The physical land use adjustment programs—erosion control, the farm part of flood control, the water facilities program, submarginal land purchase and development, and farm forestry—were placed in charge of the Soil Conservation Service. The Farm Security Administration directs the rural rehabilitation and tenancy programs. The major task of the Agricultural Adjustment Administration is the management of the conservation and adjustment programs, buttressed by an ever-normal granary through commodity loans, marketing quotas, and parity payments when authorized. All of the marketing activities of the Department, previously scattered among seven bureaus, have been consolidated under a director of marketing and regulatory work. Other changes were made to strengthen research, extension teaching, and general administration.

Why Farmers Should Take Part in Planning

In the emergency period that began in 1933 the need for quick action made it necessary to rely on specialists in planning national farm programs within the authorizations of the Congress. It was apparent at once, however, that specialists could not do the job alone. Agricultural planning proved to be too complex a task and the responsibility too great to be left wholly in their hands. Administrators agreed that it was essential for farmers themselves to take a dominant role in determining the broad outlines of such programs. It was but a step farther to the realization that local help was needed in adapting national programs to the great variety of local situations.

Even after the immediate emergency phase had passed there remained a persistent tendency, however, to rely on expert opinion alone in the preparation of programs. It was easier, though less

democratic, to base action on official decisions rather than to employ the slower process of widespread discussion by, and consultation with farmers and farm groups. Knowing that any tendency toward solely official determinations of the provisions of action programs must be guarded against—to prevent the development of some of the distasteful consequences of bureaucracy—the Department made an effort early in 1935 to have more farm people take part in the planning, as had already been done in the administrative phases of some of the programs.

This first effort was directed toward the guidance of the programs administered by the Agricultural Adjustment Administration. In each agricultural county of the United States there was set up an adjustment planning committee of 10 to 20 members representing each of the various agricultural interests of the county. Such committees now exist in most counties where agriculture is of major importance.

These county A. A. A. program-planning committees found they could not limit their work to the programs of the A. A. A. and do a good job. It became necessary to consider other programs, not only of the Department but of State and other Federal agencies. They found themselves face to face with the interdependence of all agricultural programs.

The development of the idea for community and county land use program-planning committees grew out of this effort which began 4 years ago. The experiences of these older committees indicated plainly the need for full farmer participation in program planning. They proved that a satisfactory national plan cannot possibly be developed by Federal and State officials acting alone. Such officials have neither the knowledge nor the skill required for doing such planning with proper consideration for the people now living on the land.

One reason is the extreme variation that exists in both the technical and economic adjustments appropriate for regions, communities, and individual farms.

The complexity of National agricultural planning is at once apparent when it is recognized that there are more than 500 different

type-of-farming areas in the United States. There are the well-known Corn and Cotton Belts, the wheat, range-livestock, dairy, and other regions. But the character of farming in any one of these regions is by no means uniform. The Cotton Belt, for example, is divided into various subregions according to differences in both physical and economic conditions. At least 15 or 20 such subregions can be easily distinguished. They include such areas as the small irrigated valleys of the Southwest, the large-scale cotton area of western Texas and Oklahoma, the Blacklands of Texas, the Mississippi-Alabama clay hills and rolling uplands, the Piedmont and the Coastal Plain. The process of refinement may be carried still further. In the Mississippi-Alabama clay hills and rolling uplands, for example, there are 6 different type-of-farming areas; and within each of these, differences between individual farms are often as great as those between areas.

When there exist such wide variations in agriculture even within regions of similar interests, unquestionably the planning task is one in which individuals, communities, the States, and the Federal Government must all take part.

Even if the soil scientist, the economist, and other experts were able to develop the best program without the help of farmers, the program could be carried out only with their approval and assistance. Moreover, a plan developed solely from a National or State point of view is likely to overlook or disregard important local interests.

On the other hand, a National plan is not merely a basketful of local plans. The problem is one of finding a workable program of action concerning which most National and local interests are in harmony.

Differences between expert and farmer opinion as to needed agricultural adjustments are generally due to differences in available information upon which the opinions are based. This does not necessarily mean that the farmer has less information than the expert. It may mean only that each has different kinds of information. Both the farmer's kind of information and "expert" information are needed in building an adequate program. The

expert is often a specialist with vision for only one aspect of a problem. Though the farmer may not see that particular aspect so clearly, he is likely to see other pertinent phases of his problem that the specialist overlooks. Beyond this, policy judgments might differ for reasons no more tangible than differences in social philosophy.

Thus, it may be concluded that no group of people is better suited to synthesize the judgments of specialists and to forge them into workable programs than responsible local people who know farming as only experienced farmers can know it. This is only a way of describing the democratic principle which requires experts and specialists to function as advisers to representative laymen. Democracy is not government by experts. Democracy is government by the people, who seek the aid of experts. It is upon this philosophy that the Department of Agriculture and the State colleges of agriculture are attempting to build agricultural planning.

Growth of Federal Responsibility

ALTHOUGH the Federal Government first began to recognize its responsibilities to agriculture a century ago, when the Congress provided a small appropriation for agricultural fact-finding purposes, our public policies did not begin to take form until 1862.

In that year the first group of major agricultural laws was enacted by the Congress. The first Homestead Act was passed; the Department of Agriculture was created to "diffuse among the people of the United States information relating to agriculture"; and the Morrill Act was passed, donating lands to the States, the proceeds from these lands to be used to support colleges of agriculture and mechanic arts. These have become known as the land-grant colleges and universities.

If teaching is to be worth while, sound information must be gathered. So, in 1887, 25 years later, Congress passed the Agricultural Experiment Stations Act. This act authorized the establishment, under the direction of the land-grant colleges and universities, of experiment stations to conduct research relating to agricultural subjects.

The experiment stations set to work gathering, assimilating, discovering, testing agricultural information. The stations published this information. Soon, however, it became evident that most farmers were lagging far behind the experiment stations.

Few were using the practices recommended by the research workers. So Congress passed the Agricultural Extension Act of 1914. This act authorized the Department of Agriculture and the land-grant colleges and universities to give instruction in agriculture to persons not attending the colleges. Thus cooperative extension work was begun, with a county agricultural agent in each county working under the immediate supervision of the State college of agriculture.

Out of these activities of education and research there grew a great body of agricultural knowledge. Especially in the last several decades we have made rapid progress in the field of agricultural science. We have been successful too, through our system of extension education, in taking the results of our research from the experimental farms and laboratories to the farms of the Nation.

Another outgrowth of these activities is the close working relationship that exists between the Department and the land-grant institutions.

With the deepening of the agricultural depression in 1929 it soon became apparent that more than education and research would be required if agricultural stability were to be regained. And so, when the Congress passed the laws authorizing what have come to be called action programs, the traditional working relations that had existed between the Department and the land-grant universities for 70 years suggested immediately that the agricultural colleges be asked to assist with these programs. The colleges, through the county agents of the extension services, undertook to explain the new programs to farmers and to help farmers to set up the machinery to administer them.

The agricultural problem became a major national issue soon after 1921. That year marked the beginning of the period of acute farm trouble. The country entered into a short industrial depression, and prices fell. Although the prices of industrial goods soon recovered, the prices of farm products continued to fluctuate at the lower level. Ever since the fall of 1920, surpluses of many of the staple farm products have overhung the market, depressing

UNITED STATES DEPARTMENT OF AGRICULTURE
Miscellaneous Publication 351
Planning for a Permanent Agriculture

ERRATA SLIP

Page 13 -- 7th and 8th lines:

The statement: (3) the United States changed abruptly from a creditor to a debtor nation;

should read

(3) the United States changed abruptly from a debtor to a creditor nation;

prices. Why did these surpluses accumulate? Why did they not disappear in years of short crops, as they always had before?

Although most farmers are familiar with the principal answers to these questions, it may be useful to repeat them here: (1) The area of cultivated land greatly expanded during the World War and continued to expand after the armistice; (2) the automobile, truck, and tractor displaced many horses and mules; (3) the United States changed abruptly from a creditor to a debtor nation; (4) European nations increased their production of farm products; (5) foreign nations refused our farm products; (6) new producers in newer countries such as Argentina and Australia entered the world market.

Up to the beginning of the World War Europe had invested heavily in the United States. European investors helped to build railroads and factories and to develop the natural resources of a rich land. This country paid interest on these loans largely by exporting agricultural commodities. So long as we owed Europe, the channels of trade remained open. The World War reversed the flow of credit. In less than 5 years Europe owed us huge sums of money. There was but one way for Europe to pay her debts—to sell goods in international trade. This she was unable to do. Here and abroad international and national policies interfered with the interchange of goods.

Our tariffs, already high on manufactured goods, were lifted higher. For a time we extended further credits to Europe, and Europe sent some gold to us, but this arrangement only postponed the inevitable crash. A wave of nationalism swept over the world. Countries that had passed through 4 years of war felt deeply the need to be self-sufficing. Above all, with short war rations a vivid memory, they intended to be dependent on no foreign nation for food. Europe resorted to tariffs on agricultural products, to import quotas, to subsidy programs, and to other measures to end domestic competition with food products from this country. Behind these trade barriers Europe expanded her agricultural production, just as the United States in the preceding era had expanded her manufactures behind a protective tariff.

Since colonial days our agriculture had constantly enlarged and

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tooled its farm plant to produce for a growing export trade. The World War only accelerated the trend. By the close of the war farmers in this country had adjusted their plant to allow for sale abroad of the products from many millions of acres. They quickly felt the gradual loss of much of their foreign market as the European nations turned from war to agriculture and erected barriers to trade. Surpluses piled high, and prices slammed down.

Prices had been abnormally high in the war years. This had caused quick, drastic shifts in the uses of land. Grazing land and forest land that had been considered until war times as unsuited to farming was brought under the plow—land that, under cultivation, could return a fair living only while prices were high and, in some localities, only while the weather favored. Grass on the Plains was turned under for wheat; more forest land was cleared; cash crops like cotton and corn replaced the grass and forage crops that formerly protected the soil from washing off the steeper slopes. Gasoline-propelled machines displaced horses and mules which had consumed the products of 35 million acres, releasing for the production of food and fiber land which had been used to produce feed. Farm machinery prices doubled. Land prices boomed. Farms sold for two or three times their former price. Lending agencies made many loans which later proved unwise. Farmers assumed obligations that could be met only if they got high prices for their products. Farm mortgage indebtedness rose from 3 billion dollars in 1910 to 9 billion dollars in 1928.

Farmers did their best to make drastic adjustments in the post-war years, but they could not make them quickly enough. Under the pinch of low incomes they were forced to overcrop their soil; they were compelled, at least temporarily, to produce more bushels of grain, more bales of cotton, more stock, to meet interest, taxes, and other inflexible production costs and to purchase nonfarm commodities at high prices, which after the war had not come down as fast or as far as farm prices. This was a losing game. Farmers lost their farms. More than 40 thousand farmers passed from owner status to tenant status each year. Millions of others cried out for Government assistance to help them bring about readjust-

ments in farm prices. Finally, a million farm families, mostly in regions dependent on one cash crop, were lacking even the necessities of life, and they applied for relief.

The World War and other international pressures sorely aggravated our difficulties, but all of our troubles cannot be blamed on that conflict. Many of them are of domestic origin. World disturbances only hastened the arrival of problems that grew out of our heroic efforts to subdue a continent.

We know now that certain shortcomings always have been inherent in our public land policies. We have had, really, but one policy for a country of widely diverse soils, topography, and climates. We gave little consideration, at least at first, to the widely divergent adaptabilities of land. Land policies suitable for the humid East, for example, were not suited to the drier West. In many parts of the country the 160-acre homestead tracts were much too small to yield a family living. Many lands opened up to farming undoubtedly should have remained in trees and grass. Many thousands of families were permitted, and often urged, to settle on lands too poor or on farms too small to yield them an adequate living. Looking back, we find little guidance was offered settlers.

Many of the causes of land misuse in our country are rooted in attitudes developed in a period of great land plenty. Perhaps the strongest of our pioneer beliefs was the conviction that each man was entitled to unrestricted ownership of a piece of the earth. So long as we had land in abundance our principal aim was to dispose of it to settlers as quickly as possible.

To put our lands into the hands of the people was a worthy objective, but unfortunately along with the accomplishment of this objective there arose some abuses. As a Nation we came to speculate heavily in land, both in a small and in a large way. We permitted corporations to acquire large tracts of the public lands, and many millions of acres of forests were promptly devastated as one of the immediate consequences. We came to expect perpetual rises in land values and looked upon them as one of the primary compensations of farming. Much land got into the hands of non-

farmer owners, and the percentage of tenant operators grew astonishingly.

Today, partly as a result of our land policies and partly as a consequence of world-wide disturbances, we are faced with a great bundle of land problems: Eroded and worn-out farm lands; more destructive floods in areas where lands have been especially misused; overgrazed and depleted range lands; stranded communities in regions of abandoned farm lands and cut-over forests; the Dust Bowl—to name a few. And associated with these land problems are other human problems even more difficult of solution.

Lack of knowledge of good farm, range, and forestry practices undoubtedly accounts for a share of our millions of acres of wasting lands, but there are other causes which cannot be overlooked. Even were all farmers, ranchers, and lumbermen familiar with the best conservation practices and measures, many would be either unable or unwilling to put them into effect. They might not be financially able to do so. A farmer may lack sufficient land resources, as well, to do other than he is doing. Quite often private and public interests in land fail to coincide. They may in certain instances conflict violently. It is scarcely to the advantage of the tenant for a year, for example, to conserve soil resources. Few tenants will take steps to do so until they establish long-time interests in the land.

Habits of farming are hard to change. Ours were born in a day when land was abundant and cheap. When its land wore out, a family picked up and moved farther west. There is no incentive to conserve land when it is cheap and plentiful. The incentive to conserve is born of approaching scarcity. We have reached that stage with land. There are no longer new territories to open, new frontiers to cross. From now on we must live on what we have.

The Response of Government

With so many factors beyond individual control it was natural for farmers to petition Government for assistance. Working as individuals they were unable to deal with the forces working against them. They lacked the tools with which to work. They hoped,

through Government, to attack their problems cooperatively. Government, both State and Federal, responded with a series of laws. Some of these have been superseded by other legislation in the light of experience, court decisions, and changing circumstances. Together, they shape a new agricultural policy for the country.

This new agricultural policy, undoubtedly not yet mature, grew very slowly at first. It did not begin to find expression in national legislation until passage of the Agricultural Marketing Act of 1929, which created the Farm Board. The Farm Board sought to control prices by controlling marketings of the staple crops. But it was given an impossible task. Having no powers to control supplies through production limitation, it failed. Since then, other acts of Congress have been passed to aid in lifting agricultural prices. Profiting by experience with the Farm Board, Congress passed the first Agricultural Adjustment Act during the depths of the price crisis of 1933. Its principal objective was to raise farm prices and income by controlling the production of certain staple commodities through acreage limitations. An adverse court decision ended this first production-control effort. Since this decision was rendered, two major farm acts—the Soil Conservation and Domestic Allotment Act of 1936, and the act which supplemented it, the Agricultural Adjustment Act of 1938—have authorized programs designed to conserve soil resources and balance agricultural and industrial income.

It was realized meanwhile, that income improvement was only one of the adjustments needed in agriculture, even though it was inextricably related to most of them. To cope simultaneously with the other aspects of the farm problem the Resettlement Administration was created to aid in the rehabilitation of the disadvantaged in agriculture. This program, now modified, is carried on by the Farm Security Administration. To the problem of erosion control Congress responded with the act that created the Soil Conservation Service. The Bankhead-Jones Act provided for tenancy reform and for public acquisition and development of land submarginal for agriculture. The Water Facilities Act of 1937 provided for small water developments in the arid and semiarid areas where

these are necessary to agricultural progress. The Flood Control Act of 1936 and subsequent amendments authorized land treatment for flood control. Other acts provided for the development of farm forestry, for crop insurance, marketing agreements, for purchase of land for public forests, for developing wildlife sanctuaries, and for other activities.

This list of public programs is only a partial one. It includes only a part of those administered by the Department of Agriculture. It does not include the programs authorized by State laws mentioned earlier in this publication, nor does it include the programs in aid of agriculture administered by other Federal agencies. Yet it is sufficiently long to show that our traditional attitude toward farming and farm land is rapidly passing. We are undoubtedly coming to look upon farming as an industry requiring direct assistance from the Federal Government and upon farm land as national wealth entrusted to the care of an individual. Under the new concept, it is public policy to enable farmers to earn a fair share of the national income and to charge them in return with the responsibility of conserving and maintaining the land.

The National Farm Programs

Most people agree that our land policies should be such as to guide us toward use of land in ways that will provide the highest possible standard of living for the people of the United States. Under such a concept our land policies should contribute toward security for the farm home, stable and adequate incomes for farm families, and a continuous and abundant supply of farm products for all of our people. Most people agree, further, that we should use our lands only in ways that will maintain their productivity. To do otherwise is to cheat ourselves and our children, and to defeat our aims.

The programs the Department is administering seek to achieve these broad objectives. However, these objectives cannot be achieved by Federal action alone. The Congress has provided most of the tools which the Department now feels are needed for dealing comprehensively in a national way with our many-sided farm problem. But the farm problem is not wholly a national problem that can be solved solely by national efforts. As all farmers know, it is also an individual problem, a local problem, and a State problem. Its solution will require a degree of cooperation that never before has been attained. It will require full and understanding cooperation between local, State, and Federal people, not only in the planning phases, but in the law-making and action phases as well.

The public tools we work with in aiding agriculture have been conceived by a great many people, and have been forged and made ready for use by a great many legislative bodies. The job of planning is to make with these tools the best possible program for the common good.

Effective plans must be prepared in the light of what can actually be done toward their accomplishment. This means that farmers on land use planning committees should have information about existing Congressional mandates to the Department of Agriculture and to other agencies of the Federal Government, as well as information about State and local laws that may provide useful tools for fashioning better public farm programs. This section of this publication was prepared with this need in mind. It gives information about the programs administered by the Department of Agriculture that directly or indirectly influence the use of land, and which community and county committees must consider in building a sound local program.

Agricultural Conservation Programs

Economic pressure on the farmer is generally recognized as the major cause of unwise land use. The farmer as a rule wishes to use his soil as prudently as possible, to guard it against the continuous ravages of erosion and in general do all that he can to keep his land fit for continuous production. Economic pressure, however, frequently drives the farmer to exploitation of his land or to the type of farming that has as its end not a way of life but a way of making a living. Under such pressure the farmer is compelled in spite of himself to deplete his soil of its productivity, or to expose it to needless erosion, in an effort to grow enough "cash" crops to meet his fixed costs of living.

The agricultural conservation programs, which are administered by the Agricultural Adjustment Administration, represent the major attempt of the Federal Government to lighten this economic pressure sufficiently to enable the farmer to make prudent use of his land. Through these programs the Federal Government offers to help farmers meet the unavoidable costs of better land use.

Through the agricultural conservation program the farmer can receive specified payments for shifting land from soil-depleting to soil-conserving uses and for adopting soil-building practices designed to improve or safeguard the productivity of his land.

The programs are planned and administered insofar as possible by the farmers themselves. Although final responsibility for the programs rests with the Administration in Washington, continuous efforts are being made to broaden the activities of the cooperating farmers both in actually planning and in operating the local programs.

Community conservation committees of three farmers elected by the local farmers are the nucleus of the local program. These community committees help in adapting the national program to local needs by recommending suitable soil-building practices that may be used in earning payments on any given farm, or by advising in connection with proposed shifts of land from soil-depleting to soil-conserving uses.

County conservation committees serve a similar function in the county, seeking always to adapt the program insofar as possible to local needs and to keep individual acreage goals, either soil-conserving or soil-depleting, in line with the best use of the farmer's land.

Of particular interest in this connection are the "experimental" counties, which have been a feature of the programs since 1937.

Under the 1937 program, there were established for 10 counties in the United States a special agricultural conservation program which differed in provisions and methods from the regular programs of the regions in which these counties were located. The purpose was to permit farmers in the 10 counties to use special ideas or local recommendations so that the experimental programs might serve as laboratories in which modifications of the regional programs could be tested out. Provisions of the special programs were often suggested and developed by county committeemen, county agricultural extension agents, and individual farmers. Features of the program frequently were proposed and worked out by State agricultural officials or specialists from the State

agricultural colleges. Sometimes, other features were proposed by Washington officials. In all cases the special programs were laid before the farmers of the counties concerned and farmers voted in referendums on whether they would adopt the special program or continue with the regional programs already announced.

Of 13 special programs proposed, 9 were adopted and carried out in 1937 in 10 different counties representing 9 different types-of-farming areas. Five of these experimental counties continued their programs in 1938; in addition, experimental programs were undertaken in 1938 by 5 new counties.

Under the regular agricultural conservation program, in addition to payments made for keeping the soil-depleting acreage on any given farm within the soil-depleting acreage allotments recommended for the farm, payments are also made for adopting soil-building practices found to be suitable to the farm or to the area. The maximum payment on any farm can be earned by keeping the soil-depleting acreage within the soil-depleting acreage allotments and by carrying out sufficient units of soil-building practices to earn all of the farm's soil-building allowance.

The soil-building practices followed by farmers cooperating in the agricultural conservation program vary with the types of farming employed in different areas of the Nation, but all may be grouped under four general headings:

1. New seedings of soil-conserving crops such as grasses, legumes, and trees.
2. The application of limestone, superphosphate, or other chemical applications; mulching orchards, green manuring, etc.
3. Terracing.
4. A wide variety of erosion-control measures such as contour furrowing, protecting summer fallow, strip-cropping, damming, reducing the number of animal units feeding on range land, and restoring native grasses.

The extent to which farmers have availed themselves of the help offered by the Agricultural Adjustment Administration in the agricultural conservation programs is exemplified by a brief summary of the results under the 1937 program, for instance. Farm-

ers participating in that program diverted more than 26,000,000 acres from soil-depleting crops, and established new seedings of soil-conserving crops and cover crops on more than 41,000,000 acres. Protective fallowing to conserve moisture was applied to more than 9,500,000 acres and erosion-control practices such as contour furrowing, strip cropping, and basin listing were carried out on nearly 7,000,000 acres.

Farmers in complying for soil payments also applied to their land nearly 5,000,000 tons of limestone, as well as over 300,000 tons of phosphate fertilizers, for the purpose of encouraging growth of soil-conserving crops.

In an effort to extend the principles of agricultural conservation to the largest practicable proportion of all kinds of farms, specific programs have been worked out for the western range lands. In formulating these programs, special attention is given to providing for the encouragement of range-conserving practices that have been tested and found adaptable and effective in the areas for which they are approved.

Ranch operators are encouraged to adopt range-conserving practices through benefit payments conditioned entirely on the performance of these practices. In the range-land areas, diversion of acreage of soil-depleting crops is not practical as a major soil-conserving measure because the proportion of cropland in ranches in range territory is relatively small.

Practices recommended are those which have been demonstrated to aid in checking depletion of forage and erosion of land. They include measures for the conservation and more efficient utilization of both vegetation and water, and they are adapted to meet local needs, since a practice suitable for one range State may be unsuitable for another.

Range-conservation and improvement practices encouraged under the 1937 agricultural conservation program were carried out on 37,455 ranches in 17 States. These ranches comprised a total acreage of more than 154,500,000 acres, with a total grazing capacity of approximately 6,584,000 animal units. Natural and artificial reseeding was carried out on more than 15,000,000 acres of land.

To increase water supplies for livestock on range land, earthen dams, tanks, pits, and reservoirs with a total capacity of more than 31,000,000 cubic yards were constructed. This practice was carried on in all the range States. In addition, ranchers in States in the western region dug 1,311 wells and constructed 11,640 seeps and springs to develop natural watering places for livestock.

Measures to control erosion and water run-off included the construction of 3,252,741 lineal feet of spreader dams and terraces; the contouring of 60,068 acres of land; and, in Oklahoma and Texas, 19,957,000 feet of ridging to contour range land.

The Ever-Normal Granary Program

Complementing the agricultural conservation program and rounding out the 1939 farm program of the Agricultural Adjustment Administration is the Ever-Normal Granary program.

Just as the agricultural conservation program serves to help the cooperating farmer put his land to the prudent use recommended for conserving his soil resources, so the Ever-Normal Granary program of the A. A. A. seeks to point out to the cooperating farmer the land use best suited to his available markets, and to help him market or store his seasonal surpluses in a way best adapted to the effective conservation of his harvest.

The program is based upon those provisions of the Agricultural Adjustment Act of 1938 which are not amendments to the Soil Conservation and Domestic Allotment Act—the act which since its approval on February 29, 1936, has been the basis for the agricultural conservation programs. The Ever-Normal Granary is primarily a program for stability in farm marketing. It is built upon the common-sense theory that the farmer should store his surpluses in the soil insofar as possible; however, when that is impossible, either because of unexpectedly heavy harvests or because of an unforeseen decline in market demand, the farmer himself should store his seasonal surpluses until such time as there is demand for them. In this way, not only can farm marketing be made more orderly, to the distinct profit of the farmer—who can thus avoid the disastrously low prices of market gluts—but also

the annual supply of food and feeds can be stabilized, to the distinct advantage of the consumer—who can thus avoid the customary scarcity prices that usually follow drought or crop failure.

The various features of the Ever-Normal Granary plan as it is embodied in the 1939 farm program of the Agricultural Adjustment Administration are as follows:

Stabilization Efforts

The stabilization efforts of the A. A. A. program begin with production plans for farm marketing. The mechanisms for the initial operation are the national acreage allotments for soil-depleting crops. These allotments are designed to point out the advisable decrease or increase in crop plantings devoted to soil-depleting crops which will still leave such plantings safely above the level required for adequate production.

The allotments represent the carefully calculated volume of farm production that will be required to establish a supply adequate to meet all requirements of domestic consumers of farm products, to meet all export markets which offer returns large enough to justify extra farm labor and the exploitation of the land, and to establish and maintain reserve supplies of farm products larger than the country has been in the habit of maintaining in the past. These reserves are the Ever-Normal Granary safeguard both for farm income and for fair prices to consumers.

The national acreage allotment for a given crop or a group of crops is that acreage which is either needed to produce an adequate supply or that acreage which approximates a conservational use of the Nation's farm land. The method for determining an adequate supply for each of four basic commodities (cotton, corn, wheat, and rice) is specified in the Agricultural Adjustment Act of 1938.

This adequate acreage for the country as a whole is distributed among States, counties, and individual farms. Past production records are taken into account in dividing the allotments among States and among counties. In working out acreage allotments of

soil-depleting crops for individual farms—the job performed by local and county committees of farmers selected by farmers—the size of each farm is considered as well as the degree of erosion, the lay of the land, and other pertinent factors.

Special conservational allotments are worked out for corn, peanuts, and potatoes in areas where these crops are customarily produced and marketed in commercial quantities. In addition, there is a "general" soil-depleting crop-acreage goal that includes all other soil-depleting crops. These special or general conservational allotments are dovetailed quite readily into the Ever-Normal Granary allotments specified in the act for four basic crops.

In order to qualify for benefit payments under the A. A. A. farm program for 1939 a farmer keeps his plantings of soil-depleting crops within the acreage allotments that have been worked out for his farm. The result is that if yields are normal, the country as a whole produces enough to meet the requirements of all probable markets and all advisable reserves without wasteful overproduction or without ruinous, price-breaking surpluses for any of the soil-depleting cash crops. At the same time conservational practices are instituted on a goodly percentage of the Nation's farm land.

Participation in this program is wholly voluntary. There is no penalty for overplanting. Exceeding an established soil-depleting acreage allotment means only that the payments which might be earned by staying within the allotment are reduced or forfeited.

Commodity Loans

When supplies are adequate or more than adequate to meet the current needs and to fill the ever-normal granary, commodity loans are an aid to farmers in maintaining adequate reserves in storage.

For their incomes, farmers depend on the sale of their crops. If they are hard pressed for money, as they usually are, they may be forced to sell whole crops as soon as they are harvested. Furthermore, it costs money to store farm crops such as wheat, cotton, corn, tobacco, and rice.

To prevent the emergency wherein farmers are forced, just at

harvest time, to throw whole crops on a market which may be oversupplied, or to sell it to speculators who will hold it in the hope that scarcity later will force the price to a high level, the A. A. A. program provides for loans to farmers, on the security of their stored commodities. Such loans give the farmer an immediate return of at least a part of the value of his crop, and enable him to hold some of the crop in reserve to be moved to market when it is needed and when the price is fair.

Such storage supplies guarantee consumers that food, feed, and fiber crops will be available for purchase at less than scarcity prices; they guarantee farmers that they will have supplies to sell even in years when crops are short.

The loans, made through the Commodity Credit Corporation, may be made on any agricultural product, although the law directs that those on certain commodities will be subject to specified conditions. As the law prescribes, the rates and other conditions will be designed to prevent collapse of farm prices, and to facilitate the movement of crops to market when they are needed.

Marketing Quotas

Under the first step of the A. A. A. program the Government helps farmers to establish a balanced, soil-conserving production. Under the second step the Government makes commodity loans to enable farmers to keep enough on hand for their welfare, and for the safety of consumers.

A period of several years of unusually good growing weather and high yields, however, might build up supplies of farm products to levels above the requirements of domestic consumers, above the possibilities for exports, and above any reasonable need for reserves against scarcity. This could happen even when acreage allotments, which are figured on the basis of average yields, are strictly observed and soil fertility is conserved. As a matter of fact, the soil-conservation features of the program will increase acre yields and the size of the crops harvested from a given acreage.

If acreage allotments are not observed, with unusually favorable

growing conditions the granary will rapidly overflow. To prevent this, with the consequent flooding of markets and the breakdown of farm prices, income, and buying power, the Agricultural Adjustment Act of 1938 establishes marketing quotas to regulate the volume of cotton, corn, wheat, tobacco, or rice as it moves through interstate commerce channels to market.

The act specifies, for each of the commodities listed (and for no others), the levels to which supplies must rise before a marketing quota for the commodity can become effective. These supply levels are fixed at points so far above the normal requirements and the desirable reserve stocks that reaching them would constitute a definite menace of crushing, wasteful surplus, and of market collapse.

The act specifies also that when and if supplies reach such excessive levels, marketing quotas may be used. The national marketing quota represents in general the same amount of the crop in question as is provided by the national acreage allotment for that crop—that is, more than enough for all domestic and export requirements.

When the supplies are at the excessive levels which the act specifies, producers of the commodity in question are asked to vote in a referendum on whether or not they approve the quota.

If two-thirds or more of the producers voting are in favor of the quota it becomes effective; otherwise it does not. In March 1938, producers of cotton and of flue-cured, dark air-cured, and burley tobacco voted in referenda on marketing quotas of these products. The supply of each, in sight for the marketing year 1938, had reached the levels specified in the act. In all cases, the producers voting favored the application of the quotas by majorities much larger than the required two-thirds. Late in 1938, under quite similar conditions of supply, cotton producers again favored application of the quotas for the 1939 marketing year by large majorities, whereas tobacco and rice producers decided against them—a good indication of the extremely democratic manner in which the programs are operated.

When a national marketing quota for any commodity becomes

effective, it is distributed among individual farms much as acreage allotments are distributed. The distribution is so made that it gives to each farmer his equitable share in the marketing of the crop just as the acreage allotment pointed out to him his equitable share in the production of the crop.

The act prescribes penalties for each bushel or each pound of a crop marketed in excess of a farm's marketing quota. This penalty, collected through the buyer of the product and turned in to the United States Treasury, amounts to 15 cents per bushel of corn or wheat, 2 cents per pound of cotton, etc.

The act provides that when a marketing quota is in effect, loans on that crop shall be made available to producers to help them carry over that portion which could not be marketed without a penalty.

It provides that should a new and larger need for the commodity develop during the marketing year for which the quota is in effect, the quotas shall be adjusted or lifted entirely and the commodity released to market.

At the end of the marketing year in which a quota is in effect, the amount of the commodity which has been carried over is figured into the supply for the following year in determining the national acreage allotment. Thus if a huge surplus accumulates but is withheld from the market, the acreage allotment for that crop for the following year is correspondingly reduced.

Crop Insurance

In addition to commodity loans, the Agricultural Adjustment Act of 1938 provides for crop insurance for wheat growers, beginning with the 1939 crop. The insurance plan calls for payment of both premiums and indemnities in actual wheat or its cash equivalent. As a result, the plan is an aid to the establishment and maintenance of reserve stocks of actual wheat, to the advantage of both producers and consumers.

While crop insurance is at present provided for wheat only, later, as it is tested and developed, the plan may be extended to other crops.

Additional Features

Additional features of the 1939 farm program may be mentioned briefly. One of these is the provision by which the Government may purchase burdensome surpluses of certain commodities, remove them from regular market channels, and use them for the relief of the needy and unemployed. Operations through which the Government assists in financing the diversion of certain surplus products into new uses at lower prices are proving of value in the furtherance of the plan. And, finally, two other provisions may be pointed out as contributing greatly to the program: (1) That which authorizes the establishment and maintenance of marketing agreements on some commodities to stabilize their movement to market, to avoid waste, and to obtain better returns for the growers; (2) that which provides for the finding and developing of new uses and markets, both domestic and export, for farm products.

The Sugar Program

Under the Sugar Act of 1937 the Secretary of Agriculture is required to estimate in advance the sugar requirements of American consumers for each calendar year and then to establish marketing and import quotas for the various sugar-producing areas according to a formula approved by the Congress.

If it is apparent that the available supply of sugar in any such producing areas, domestic and foreign, will result in disorderly marketing, the Secretary is authorized and directed to allot quotas among the persons who market or import sugar, on the basis of percentages specified in the act.

The act also authorizes Government payments to domestic producers of sugar beets and sugarcane. In order to qualify for payments, producers must pay fair wages to laborers employed, must not use child labor, must use approved farming practices in connection with the production of their sugar beets or sugarcane, and, if they are also processors of beets or cane, must pay fair prices for all sugarcane purchased from other producers. Each producer's production may not be greater than his proportionate share of the

quota for the producing area in which he is located. Payments authorized include abandonment and deficiency payments as a crop-insurance feature.

Payments are made from collections of an excise tax on sugar manufactured in and imported into the United States.

The act is administered by the Sugar Division of the Department.

The Rehabilitation Program

Unwise use of the land was largely responsible for the condition of more than a million farm families who were in urgent need of relief during the depths of the depression. Many of these 5 million people had been ruined by floods or droughts, and all of them had suffered severely from the general business decline; but these were not the sole causes of their difficulties. The great majority were the victims of long-neglected soil erosion, careless and unscientific farming practices, inadequate acreage, insecure tenure, overburdening debts, and a prolonged period of depressed farm prices.

Since it obviously would have been both expensive and demoralizing to carry these families indefinitely on direct relief, the Government has attempted to help them reestablish themselves as self-supporting farmers. This task of rehabilitation was entrusted to the Resettlement Administration, and more recently to its successor, the Farm Security Administration.

Many needy families that have access to land suitable for farming fail because they lack adequate equipment and training in farm management. These two needs the Farm Security Administration has endeavored to supply. Small loans are made to farm families who cannot obtain credit from any other source, for the purchase of the minimum of equipment required to carry on farming operations. Careful supervision of farm- and home-management plans provides the training and guidance.

Rehabilitation loans finance the purchase of necessary farm supplies, livestock, seed, fertilizer, feed, tools, household equipment, and temporary food and clothing requirements. They are repayable over a period of 1 to 5 years and carry a 5-percent interest rate.

If the farmer is hopelessly burdened with debt, a voluntary committee of local citizens helps him to make an adjustment with his creditors, thus enabling him to get on a sounder financial footing.

When the farm is rented the Farm Security Administration tries to secure satisfactory leasing argeements which will give the tenant a sense of security and stability. This is not only desirable in itself, but also decreases the loan risk by assuring sufficient time for the working out of the farm plan.

The basis for the improvement of land use in the rehabilitation program is the farm-management plan. Every farm family accepting a loan agrees to follow such a plan. This plan is based on the best advice obtainable through county agents and State extension services. Studies made by these experts are applied to the individual farm, and crops best suited to that farm are planted and properly cultivated.

The purpose of the farm-management plan is to make the farmer self-sufficient in raising food for his family and feed for his livestock. This requires a diversified program of garden and feed crops as well as a cash crop, and generally tends to reduce the acreage devoted to cash crops.

Throughout the year the rehabilitation supervisor is ready to give the borrower any additional advice he may require on methods, soil-protection measures, crop rotation, etc.

Both because of the undesirable effects of insecurity on the tenant and in order to insure the proper working out of the farm plan, the Farm Security Administration encourages written leases for as long a period as practicable for all farmers who receive rehabilitation loans. Only 20 percent of all tenants hold written leases, in contrast with 83 percent of tenants holding such leases who are rehabilitation clients.

This assurance of continued occupancy, with the guidance furnished by county supervisors, has thus far served to promote soil conservation and good land use practices among rehabilitation borrowers throughout the country. In the southern Great Plains area, the number of borrowers who adopted strip cropping

increased from 215 in 1935 to 2,381 at the end of 1937. Those who used contouring increased during the same period from 438 to 3,350. The number who have begun terracing their land rose from 85 to 612.

Increase among these families of the number of work animals and livestock owned is additional evidence of improved tenure status and improved farming practices. A recent study of 231,000 borrowers showed that they had doubled their ownership of work animals, and more than tripled the number of subsistence livestock.

The enlargement of the farm units to an economic size is yet another evidence of improved land use. This same study revealed that the average acreage cultivated by clients increased from 80 to 102 acres.

The Farm-Tenancy Program

It is now generally recognized that there is an intimate relationship between our system of land tenure and such problems as soil erosion, occupancy of submarginal lands, and progressive impoverishment of the individual and community life.

Tenants with short-term oral leases have at best a transitory interest in the land they cultivate. They are not penalized for letting the land decline in fertility, nor are they rewarded for any improvements they may make. Such people are likely to regard their farms as a resource to be exploited to the full during their brief occupancy, rather than as homes to be improved and made secure for the future. Unless the farmer has some security on the land, it is difficult, if not impossible, for him to cope with land-use problems.

In the South, particularly, where a live-at-home program and a more diversified type of farming appear to be desirable, the present system of tenancy stands in the way of improvement.

Today more than 2 out of every 5 farmers in the United States are tenant farmers, tilling land they do not own. Their ranks are increasing rapidly, at the rate of about 40,000 a year. One tenant out of every 3 moves each year. In many areas, the result is a gradual impoverishment of landlords, tenants, and the land itself.

As one approach to the problem, Congress passed the Bankhead-

Jones Farm Tenant Act. Title I of this act provides for loans to a limited number of tenants, croppers, and farm laborers for the purchase of their own land. The Farm Security Administration was designated to carry out this program.

Funds have been allotted to each State and Territory on the basis of farm population and the prevalence of farm tenancy. It is estimated that approximately 2,100 loans can be made in about 325 counties with the $10,000,000 appropriated for the fiscal year 1939.

County committees, consisting of three farmers, certify the applicants who by reason of character, ability, and experience are likely to carry out successfully the undertaking required under a loan to purchase a farm.

Loans are extended to selected farm tenant families for the purchase of a family-size farm. Such a farm in general is not larger than can be handled by the farmer's own labor and that of his family. The farm provides as much productive work as possible and should yield sufficient income to provide for the family on a satisfactory basis and enable the borrower to pay off the loan.

The farms selected are productive, and the productivity will be carefully maintained by a sound farm-management plan. These plans are prepared by the farmer with the help of the county supervisor. The assistance of specialists of the Extension Service, the colleges of agriculture, and the experiment stations guarantees that the plans are in accordance with the best agricultural and home-management practices developed in each area.

Direct Relief to Farmers

There is a large group of destitute farmers who could not wisely be given rehabilitation loans, even if money were available. Thousands of families living in drought areas have been refused loans because their land did not contain enough moisture to justify planting a crop. Approximately 58,000 additional families have migrated from the Dust Bowl region to the Northwestern and Pacific Coast States. Many of these have settled on acreages too small or too barren to provide a permanent support. It would defeat the purpose of both the rehabilitation and land-planning

programs to extend loans for permanent improvements on land that should not be kept in agricultural use. Under such circumstances and in cases of extreme need, the Farm Security Administration has therefore made subsistence grants rather than rehabilitation loans.

Soil Conservation Operations

The use of land for agriculture is governed by a variety of social, economic, and physical considerations. Conceivably, man can temper the operation of economic and sociological forces; but he cannot change the broad lay of the land or the weather. Nature, in other words, imposes certain absolute limitations on the use of land.

The problem of soil erosion arises, basically, from man's failure or inability to adapt his use of the land to these physical limitations. This failure or inability is largely due to custom, or to economic and social pressures. But whatever the forces which impel or encourage it, use of the land without consideration of natural physical limitations is the immediate cause of soil erosion.

Ideally, complete and effective conservation of the soil would mean complete harmony between physical adaptability and land use. Realistically, however, in view of considerations other than the purely physical, such a relationship is not always possible. Instead, practical soil conservation becomes a matter of achieving the maximum degree of harmony between land adaptability and land use in the light of economic and social exigencies.

A Dust Bowl farmer, for example, may be anxious and willing to conserve his soil by farming his land in complete accord with natural limitations. But his holdings may be too small to provide an economic operating unit under best land use practices; under pressure of debt, he may be impelled to seek profits from exploitative farming in periods of high prices; or soil blown from adjoining land over which he has no control may be covering his fields and crops. For these, or any of a number of other reasons, he may be unable to farm as he should in order to conserve soil. In his case, economic and social pressures prevail and, as a consequence, soil conservation becomes a matter of doing the

best that can be done under the circumstances. Broadly speaking, the necessity of making such concessions can be obviated only by eliminating, or mitigating, the social and economic maladjustments which now operate to impede conservation action.

Thus, in order to realize maximum effectiveness, the physical land-adjustment program of the Soil Conservation Service must be accompanied by economic and social adjustment. Efforts to bring about adjustments of this latter type on a large scale are now being made by various agencies of the Department in a synthesized national action to achieve better use of land resources. The role of the Soil Conservation Service in bringing about better use of land must be considered, therefore, in relation to the other action programs now attempting to cope with the diverse facets of the broad problem of land use.

Erosion-Control Demonstrations

For the past 4 years, the Soil Conservation Service has operated demonstration areas in representative agricultural regions to show the best methods of dealing with typical erosion problems. These areas have been described as "show windows of soil-erosion control." To them come farmers from the surrounding countryside to inspect and study practical methods of conserving soil and water resources. Practicability is a requirement of all measures demonstrated so that a farmer, at least theoretically, should be able to return to his own land and install the same measures, with minor variations, according to his needs. Thousands of farmers have followed this procedure. Other thousands desire to, but find their wishes at least partially or temporarily nullified by realistic economic problems. Payments to farmers cooperating with the program of the Agricultural Adjustment Administration are helping to break down this impediment to soil conservation. Soil conservation districts, established under State laws, are also doing their part to bring about more widespread conservation of soil resources. Because of their promise as a medium for extensive spread and utilization of soil- and

moisture-conservation measures, present plans of the Service call for emphasis on cooperation with these local organizations.

More than 500 soil-conservation demonstration areas now constitute proving grounds and sources of authoritative reference for erosion-control measures in 45 States. Recently a demonstration was established in Puerto Rico.

Immediately after an area is selected for demonstration purposes, a project work plan is developed. In this planning, all available physical and economic data are studied. The extent of different types of erosion in relation to slopes, soil types, and land use is determined by means of conservation surveys. Data on the land use distribution of crops, pasture, range, and woods, are obtained. The extent of idle and waste land is noted. Historical and social information is sought to determine as nearly as possible the past use of all parts of the area, the growth of population, location of social and economic centers, present and past market outlets, roads and educational facilities, and similar data that will reflect possible reasons for existing land conditions, agricultural balance, and community pattern.

Often, in developing the project plan, individual farms are analyzed to determine what vegetative covers and cultural practices have furthered conservation, or allowed erosion. Cropping and fertilization practices are studied. Factual data concerning the kinds, types, and numbers of livestock, as well as the market distribution of livestock and their products, are considered. In this field, the dominant feeding and grazing practices are important. And once each distinct factor is considered in the light of other related factors, and all the information synthesized, a basis is obtained for the development of sound and coordinated project plans.

Reduced to simplest terms, the basis for project work is proper planning for each unit of land. Individual farmers assist in the development of plans for their respective farms. With the Service, they enter into 5-year cooperative agreements which outline the entire farm plan and specifically set forth the obligations of both the farmer and the Government. The farmer agrees to follow the

practices stipulated in the cooperative agreement and provide as much of the labor and materials as possible. In return, the Government agrees to provide whatever technical assistance is needed as well as additional labor and materials necessary to put the plan into effect.

Proper land use is the goal for each acre of the farm, and accordingly, individual farm plans, like project plans, are based on an inventory of physical and economic conditions. Included is an analysis of the demands made by the individual farmer and society on the land. Consideration is given to the location of the farm, present and possible market outlets for commodities and livestock, and other related factors. Also important in the development of a farm plan is the historical information concerning past treatment of the land, since past treatment usually accounts in some considerable degree for its present condition.

Half of the land covered by the cooperative agreements in demonstration areas has already been protected against erosion. On the remaining acreage conservation work is being carried forward as rapidly as possible. Briefly, the agreements now in effect mean that about 3,500,000 acres in the present demonstration areas will be farmed with approved crop rotations. Some form of strip cropping will be followed on more than 1,500,000 acres. Terracing will help protect almost 2,000,000 acres. Approximately 3,000,000 acres will be tilled on the contour, instead of in erosion-inducing, straight rows, and more than 500,000 acres will be protected by seasonal cover crops. Additional thousands of acres will be protected by various other erosion-control measures.

Cooperation With Soil Conservation Districts

For some time it has been recognized that the soil-erosion problem of the United States could never be satisfactorily solved by Federal action alone. The task is too vast and too complex to be achieved in its entirety by a central governmental agency. While Federal agencies are needed to point the way toward better land use through technical advice and assistance, the initiative and actual work of conservation on a large part of the country's tillable

land and range land must be undertaken by the farmer and rancher.

It is at once evident, however, that individual efforts to control erosion are likely to be ineffective. They can be costly and can never be anything but piecemeal. The one system of attack on erosion that promises success is the cooperative attack, beginning where erosion begins, at the crests of ridges, and working down, field by field and farm by farm, to the stream banks in the valleys below.

The soil-conservation district, a unit of local government authorized by State law, will speed this type of cooperative action. It is simply a mechanism whereby farmers or ranchers within a watershed, or other natural land use area, may organize for community action and mutual protection in combating the soil-erosion problem. More than half of the States have passed laws permitting local groups of farmers to organize such districts. It is hoped that eventually a significant portion of the Nation's erodible land will be included in districts.

In opening the way for establishment of soil conservation districts, each of the State laws passed to date has set up a State soil conservation committee, composed usually of the heads of various State agricultural agencies. This committee is empowered to make the legal determinations necessary in the creation of districts, to encourage the organization of districts, to bring about an exchange of information among districts, and to coordinate the several district programs of the State "so far as this may be done by advice and consultation." Once a district has been established, however, it is an independent unit, a subdivision of the State, and is not subject to control by the State soil conservation committee.

Proceeding under the leadership of two appointed and three elected supervisors, a district may decide to follow a program similar to that now being carried forward in the demonstration areas of the Soil Conservation Service. One of the first steps will probably be a conservation survey of the entire district, showing slopes, soil types, prevailing land-use practices, and existing erosion conditions. On the basis of this survey, the supervisors can draw up an erosion-control program to meet the needs of the

area. They may enter into agreements with farmers and help them in developing soil conservation plans for the individual farms. The supervisors may provide farmers of the district with technical assistance, and make loans or grants of machinery, seeds, planting stock, or other necessary supplies. In some instances, they may also offer the farmers a certain amount of financial assistance. And in furtherance of its objectives, the district may enlist the assistance of State and Federal agencies through the medium of the State soil conservation committee.

Purchase and Development of Submarginal Lands

In almost any agricultural area in the United States where the evidences of land waste are found—soil erosion, dust storms, human poverty, and devastated forest or range—there are economic influences which have helped to bring about the misuse of land. In order to meet their living expenses, taxes, and interest, farmers on submarginal land have cut over their wood-lots or overgrazed the range. Submarginal land, like insecure tenure, prevents them on the one hand from practicing long-term conservation, while on the other hand it forces them to consume their capital assets of soil, trees, or grass. It is the problem of submarginal land toward which the land-purchase program is directed.

The program is administered by the Soil Conservation Service.

Land purchases are made, developing land-utilization under the program, that will bring about a more desirable economic basis for land use over a wide area, and thereby make possible the conservation and permanent use of land resources for the benefit of local communities dependent upon them. The key instrument is the Bankhead-Jones Act, which authorizes the purchase of lands unsuited to cultivation. But several different instruments, particularly those provided by State or local action, are brought into play wherever possible, in order that the broadest possible benefits may be achieved. The projects, therefore, represent in a large number of cases cooperative efforts on the part of both Federal and State or local agencies toward the solution of given problems of land use.

A simple clarification of the problems encountered will help to explain the operation of the program.

So far as land use is concerned, there are two major problems which either singly or together lie at the heart of the economic trouble spots in our agricultural map. The first of these is the settlement of lands that are not suited to cultivation: There are upwards of half a million farm families occupying about 86 million acres in farms that are incapable of providing an adequate livelihood through crop cultivation. Then also, an additional several hundred thousand families are living on farms that are either too small or too large for economic operation. In either case, the results are similar from the viewpoint of the community. Poor land results in depleted resources and farm poverty; this in turn breeds tax delinquency, excessive costs for local services such as roads and schools, and increased relief.

The land-purchase program is now focused primarily upon the rehabilitation of distressed agricultural areas. The purchase of submarginal lands, and cooperation with State and local governments in action that is within their sphere, are governed by this objective.

Within the broad outlines of the Nation's land problem areas, the specific location of land use projects is determined in part by the extent of local cooperation offered in the development of desirable land use practices. State and county zoning programs, organization of cooperative grazing associations or soil conservation districts, and the development of effective State programs for handling tax-reverted land are among the leading directional measures which can supplement the purchase of submarginal land in problem areas.

Recently, the major emphasis in the land utilization program has been placed on the Great Plains, because of the pressing need for rehabilitation in that region. Consequently, the program of land utilization has gone farther in that region and more effective results may be seen there than in other parts of the United States.

Throughout the Great Plains region, wherever wind erosion with impoverishment of farmers and the disruption of local public finances has been severe, large numbers of operators are usually

either living on land that is unsuited to crop production, or on units too small for economic operation as stock ranches. In the serious problem areas, restoration of the grass cover on land that will not support crops is necessary in order to conserve the soil itself. The development of stock ranching, in combination with limited cultivation of feed crops, is generally the type of land use which natural conditions indicate as desirable. Projects of the land-utilization program combine the purchase of certain tracts unsuited to cultivation with the application of local measures designed to achieve the pattern of stock ranching and feed production that is needed in any one area.

In central Montana, for example, lies a problem area of several million acres wherein dry-land farming was greatly overexpanded. As a result of widespread farm abandonment and tax delinquency, a confused and complicated pattern of ownership developed. Larger ranches were interspersed with small dry-land farms of one section or less. Private lands were intermingled with public domain, railroad grants, and tax-reverted tracts. Many homesteads had been abandoned and remained idle and unprotected. Because of the lack of unified management, the carrying capacity of the range had decreased to one-quarter to one-half of its former capacity. Private owners, either because they could not obtain control of much of the land, or because they had no means of disposing of their small dry-land holdings, were unable to solve the dilemma.

In this area, the land-utilization project in Musselshell and Petroleum Counties was established. Some 260,000 acres of land unsuited to farming were purchased as the first step in developing a large range that could be managed constructively for the use of local stockmen. The land purchased consisted primarily of these three types: Small, dry-land farms owned by families who wished to move to other areas; abandoned homesteads over which no satisfactory control could be exercised without Government purchase; selected tracts located at strategic points throughout the whole project area on which water facilities could be developed for the improvement of the range.

While plans for purchase were being developed, the cooperation of local stockmen in the area was sought in a joint attempt to put the range under constructive management. Through the provisions of the State grazing-districts law, a means was available to develop control over much of the area without Federal purchase. Local stockmen, seeing their advantage in a program of range management, organized cooperative grazing districts under State law, and proceeded to lease privately owned land, State land, and public domain in addition to tracts purchased in the land-use program. Thus, together with the purchased lands that were scattered through the project area, it became possible to place a total of more than 1,000,000 acres under constructive range management.

Following the purchase of lands in this project there came the improvement of these lands for range use through the employment of relief labor. Useless farm buildings have been obliterated and fences rearranged to suit the new pattern of management. Of primary importance has been the development of 220 stock-watering places, mostly in the form of catch basins and reservoirs formed by small dams. Former cultivated fields have been reseeded to grass, while contour furrowing has aided natural revegetation by conserving water. These various developments have been accomplished by means of funds made available by the Works Progress Administration. The entire purchased acreage has been leased to the local grazing associations for management through the operation of the Taylor (Federal) grazing district, subject to specific regulations that will ensure the conservation and proper use of the area.

More recently the original project in central Montana has been expanded into neighboring counties. The increased scope of activity will result in the constructive management of approximately 4 million acres, of which only about 10 percent is being purchased in the submarginal-land program. Because of the improvement of the range, resulting from proper management and development of new water supplies, the area should gradually be built up to a considerably higher carrying capacity than it

now offers, and thereby be able to support more and larger herds.

Cooperation with other land-use and agricultural agencies is an essential part of the better land-use program. In most project areas, the shift toward a less intensive use of land, such as from crops to grazing or forestry, necessitates a relocation of at least some of the families from the area. This is being done through the cooperation of the Farm Security Administration as well as with the help of local agencies. Credit facilities are also needed to help achieve a better land use, particularly in the Great Plains region, that farmers may have assistance in shifting from crop production to livestock. Finally, other agencies of the Department provided technical guidance in the improvement of the purchased lands.

Much of the work of this program necessarily has been demonstrational. This was true particularly where the need for improved land use was not paralleled by the development of local means to promote the conservation and wise use of land. In these instances land was bought in more solid holdings and was developed for public ownership and management as demonstrations in multiple-use for forestry, wildlife conservation, recreation, and pasture improvement

In some of the States, notably Michigan, Minnesota, and Wisconsin, local and State programs for handling submarginal lands have been developed on a broad scale, and this makes possible an effective coordination of State and Federal land programs. In others, public understanding of land problems has not yet reached the point where effective action is possible. The demonstration projects of the land-utilization program are being made the center of educational activities that will help to stimulate local interest and action as the basis for future cooperative endeavors.

Water-Facilities Program for the West

In a report entitled "The Future of the Great Plains," the President's Great Plains Committee recommended Federal legislation for aid in the development of small water facilities in the arid and semiarid States. The report pointed out that irregular rainfall is the most striking general characteristic of many areas in these

States and constitutes one of their greatest natural handicaps. If farming and ranching in many parts of the Great Plains are to survive and if the populations of the village and urban trade centers are to be sustained, the committee stated, all available water resources will have to be carefully conserved and wisely utilized.

The Pope-Jones Water Facilities Act is one of the products of that recommendation. The program under the act is restricted to the 17 Western States—Washington, Oregon, Idaho, California, Nevada, Utah, Arizona, Montana, North Dakota, South Dakota, Wyoming, Nebraska, Colorado, New Mexico, Kansas, Oklahoma, and Texas. The act further restricts the program to the arid and semiarid areas within these States.

Since funds are limited for the first year of the program—1939—work will be concentrated in those areas of acute human distress where opportunities for water development are favorable. Many such areas have been selected and others are in process of being selected. In States where county program-planning groups are already at work and State agricultural advisory councils exist, the advice and recommendations of these groups are sought. In other States fieldmen of the Department must select the work areas without this guidance.

The purpose of the program is to help toward stabilizing agriculture in the areas of irregular and limited rainfall. Quite often the development of a small water facility is all that stands between a farmer or rancher and success in his struggle against the handicaps of an adverse natural environment. Consequently many of them, lacking such facilities, are on relief. Better use of lands, made possible by the development of such facilities, should help put many needy families on a permanent self-sustaining basis.

Only such facilities may be provided which in operation will accomplish the storage or utilization of water for stock or domestic use or for its application to farm gardens, crop or hay lands, range or pasture lands, or to other lands used for agricultural purposes. For example: On range lands springs may be developed, wells may be dug where ground water is available at reasonable depths, and small impounding dams may be constructed to create water

supplies for livestock. To increase the amount of available forage, storm waters and spring run-off from snow melt may be diverted from water courses and spread on pasture and hay lands. On farms sufficient water sometimes is not available for livestock. Where ground water is present it may be used as a source; in other areas supplies may be obtained from surface water. If an ample supply can be secured, such facilities may be made large enough for the production of an adequate home garden, a small amount of forage for work stock and, possibly, for a milk cow.

Funds are to be expended only to achieve wiser land use over a period of years. The basic legislation forbids location of facilities where they will encourage cultivation of land submarginal for agriculture. In 1939, only facilities that will benefit lands in private ownership will be built.

Tenants as well as landowners may take part in the program.

Under the program, groups as well as individuals may be helped to develop water facilities on a cooperative basis. Total cost, however, may not exceed $50,000 for any project designed for irrigation purposes.

Funds also are available for the repair and rehabilitation of existing facilities, where practicable.

The benefiting farmer or rancher is required to make the maximum contribution to the cost of the facility that his circumstances permit. The Department determines the extent of this contribution, in terms of labor, teams, equipment, materials, etc. The Department provides the funds, or labor and materials necessary to complete the installation. In exchange it takes a promissory note at 3 percent interest together with mortgage on such realty or chattels as may be available.

The amount of the loan that the farmer repays depends on his ability to repay. Ability to repay is determined by the Department. The number of years the loan runs depends on the expected life of the facility. In no case does this period exceed 20 years. The Department does not ask reimbursement of the costs of general administration of the program.

Since the program seeks to provide facilities to help farmers

attain security through putting land and water to its best possible use, it is essential that an improved farm management and conservation plan be worked out for each farm or group of farms served by a federally financed water facility, if the program is to accomplish its purposes. Therefore, every farmer benefiting from the program must agree to carry out a farm plan as a consideration of receiving the financial and other assistance offered by the program. These plans will be drawn up by the representative of the Department and the cooperating farmer or rancher. They will provide for (1) the application of soil and moisture conservation practices, (2) improved land use, (3) a production plan that provides for payment of loans and operating and living expenses, and (4) sufficient food and feed crops to meet the needs of the family and the livestock. Benefiting farmers also must agree to maintain facilities during their useful life, and to meet the repayment schedule for the water-facilities loan together with payments against other standing indebtedness, if any. Should conditions change there is provided procedure for modifying the farm plan. Provision for recovery by the Government of obligations due it is provided in the event that the benefiting farm families do not follow through with the farm plan.

The Soil Conservation Service is the agency of Government designated to build or supervise the building of the water facilities. The representative of this agency also helps the farmer or rancher devise the farm plan, and helps the operator to determine the proper soil and moisture conservation and other practices included in the farm plan. The Farm Security Administration handles the loan aspects of the program.

The Public Forests

The public forests make a large contribution to the welfare of the agricultural communities nearby. The forest stabilizes stream flow and helps to hold the soil in place, it provides inexpensive supplies of fuel and building materials, it provides an outlet for surplus labor and a source of employment to those who need to supplement their income from agriculture, and by fostering local wood-using

industries it provides a market for agricultural products. In the forested areas, forestry cannot be considered apart from agriculture.

The first studies of forestry in the United States, made more than 60 years ago, disclosed trends that threatened to have an adverse effect on the national welfare. In exploiting our forests, for example, we were ignoring the needs of agriculture and of agricultural communities. At that time, fortunately, the United States still possessed a tremendous acreage of virgin forest lands. It was therefore a logical first step in the development of our national forestry policies to safeguard the public interests by placing publicly owned forest lands in forest reserves. The act of March 3, 1891, authorized this step, and the lands withdrawn have come to be known as the national forests. Principles of management were laid down in the act of June 4, 1897. Since then, the development of our system of national forests has progressed with marked success.

While reservation of public land for national-forest purposes helped considerably to meet the situation in the Western States, it failed to meet urgent needs in the States in which the public domain had passed largely into private ownership. A policy of acquiring forest lands for national-forest purposes by purchase consequently was inaugurated by the act of March 1, 1911, and extended by the act of June 7, 1924. All purchases (totaling 16 million acres to date) are passed upon by the National Forest Reservation Commission made up of the Secretaries of War, Interior and Agriculture, two Senators and two Congressmen.

During this period many States and communities also were acquiring forest lands. The Fulmer Act of August 29, 1935, which authorized Federal aid for the purchase of forest land for State forests, will stimulate this trend.

Today, one-third of the land area of the United States (630 million acres) is primarily valuable for forests. Approximately 200 million acres are in public ownership, and 430 million acres are in private ownership. Most of the publicly owned forest land is in the national forests under administration of the Forest Service of the Department of Agriculture. These public forests are available for the use and enjoyment of all the people.

The national forests are managed for the public according to principles of forestry that will not only produce timber and protect watersheds, but will provide for hunting and fishing, livestock grazing, recreation, and other uses that can be conducted without serious conflict or without causing depletion of the resource. The aim of forestry is to manage forest lands for continuous yields of forest crops and for continued use. In general, the State forests are similarly managed, although there is considerable variation in management as between States.

The public is acquiring three general types of forested land: (1) Lands on which organized management for timber production, stream-flow stabilization, soil-erosion control, etc., is justified in the public interest and where these benefits may be attained only by public action; (2) lands that are needed to develop well-rounded forest-management programs within and adjacent to public forests, including appreciable areas of foothill range lands suitable for domestic stock or big game and logically a part of natural management units lying chiefly within public forests; (3) lands for demonstrating proper forest-management methods for the benefit of farmers and other private forest landowners.

Improvement of depleted forest communities and forest regions is a major objective of National and State forest management. The purpose is not merely to restore the trees. Human rehabilitation is a fundamental objective. Forest exploitation leaves behind it broken and depleted communities as well as depleted forests. The cut-over forest region of the Lake States is a well-known example. Though the problem may be less obvious in such regions as the Appalachians, the Ozarks, the South, and southern portions of the Central States, and sections of the West, it is essentially the same. National-forest management in these regions aims to correct unsatisfactory social and economic conditions.

Agricultural prosperity in these areas cannot be achieved through farming alone, nor can the problem be solved by moving to regions of abundant opportunity. Regions of abundant opportunity no longer exist. If they did exist, the task of resettling and making adjustments to a new environment and to new ways of making a

livelihood would be formidable, if not impossible. The practical and feasible approach to the problem is rehabilitation in place, with minor adjustments from poor location to better ones in the same locality.

A major problem in rehabilitation is that of supplying supplemental income through development of activities other than farming. The forest ranks high as a source of supplemental employment. It so happens that the most distressed areas have the highest percentage of forest land. It varies from 30 to 80 percent in the principal regions of low-farm income. A well-planned forestry program can provide needy families and other residents of these regions with cash income to supplement farming and other activities, and thus help them toward a better standard of living, and toward the development of communities with good schools, medical facilities, and the other necessities of good living.

Watershed protection is an important objective of the national forest program in the Appalachians, the Ozarks, the Piedmont, the hilly areas immediately north of the Ohio River, and in general throughout most of the Western States where much of the precipitation occurs on the high mountainous watersheds, and where the control of grazing, fire, and timber cutting is essential to the control of erosion and to the protection of costly investments in reservoirs and irrigation and domestic water systems. Forest lands on which heavy cutting, fire, and overgrazing have destroyed the absorptive capacity of the soil are a major source of floodwaters, and of silt and erosional debris. Public ownership and control of timbered watersheds, in order to conserve and restore vegetation and increase the absorptive capacity of the soil, will provide the kind of land management that will cause reductions in flood run-off, silt damage, destructive mud flow, and in deposits of erosional debris.

Another important national objective is to insure an abundant timber supply for the future. As stored supplies of organic raw material such as oil and coal decline, the burden of supplying it will fall more and more on agriculture. The forest, of all agricultural crops, is the most efficient producer of raw organic matter; it yields the greatest dry volume of organic matter per acre per year of any

crop. Thus as the science of chemistry develops and is forced to become less selective in its use of organic materials, forests should become increasingly important as producers of such material. The products of the forest can be stored on the stump indefinitely, an advantage not shared by other crops.

Vast areas of wild land in this country are capable of producing timber crops of some economic value at less cost than other crops. Even if the actual need for all of the wood produced cannot be foreseen, it would be foolhardy to permit these lands to deteriorate to an unproductive state. Restoration to a productive condition for needs not now foreseen might be very costly.

Millions of people enjoy the recreation opportunities of the national forests each year. Camping and picnicking by tourists and local residents are the principal uses, but hiking, swimming, riding, and winter sports are increasing yearly.

To the early establishment of the national forests we owe in large measure the present increased stocks of big game which had reached an all-time low early in the present century. In the national forests alone the big-game species have increased an average total of about 150 percent since 1924; at the same time open seasons have taken large harvests each year. In the West at least three-fourths of the big game now find a home on the national forests during much of the year. But the general progress of western settlement naturally pushed wildlife farther and farther back into foothills and mountain areas and absorbed or limited for wildlife use much of the former winter range. Located as they are in higher altitudes, the national forests are not able to balance the winter range with a full complement of available summer range. This introduces a problem of large importance in land planning and management.

The Forest Service's recreation developments are simple and appropriate to the forest environment and include camp and picnic areas, trails, roads, winter-sports areas, and organization camps. Large areas of undeveloped country have been set aside by the Forest Service as wilderness areas in which the natural beauty of primitive forests will be preserved for coming genera-

tions. Wilderness areas are closed to roads, timber cutting, and other development but are accessible by trail and offer ideal recreation opportunities for those who like to hike or ride amidst natural conditions.

The 173,000,000 acres of national-forest lands and purchase units in 43 States and Territories embody a combination of open glades and parks, brushlands, and areas of denser growth; streams, lakes, and swamps, thus offering a variety of food and cover adapted to nearly every type of wild animal indigenous to the various forest regions. Special areas have been set apart for wildlife and at least 80,000,000 acres provide wildlife habitats free from use by domestic livestock.

In the East, national forest areas provide in most instances proper winter-summer balances. However, in the West it is estimated that 9,000,000 acres of additional winter-range area are needed to provide adequately for present populations. If the summer range were fully stocked, about 25,000,000 acres additional should be acquired or should have larger dedication to game uses to go with the summer and winter habitat within the national forests. This additional summer capacity for game would go along with the usual allocation of ranges to domestic stock with but minor adjustments. Of the winter range area outside present national-forest boundaries, nearly 15,000,000 acres is privately owned and about 9,500,000 acres is in public domain. There are also many isolated private holdings within the national-forest boundaries, marginal in character, which, acquired, would enter into the pattern of a better-balanced land use for wildlife.

The national forests at present furnish range, with certain winter limitation, for some 1,750,000 big-game animals. Fur bearers are estimated at about 1,800,000; and game birds of many kinds find a home in the forests. Upland game birds such as turkey, grouse, quail, and doves, are becoming an increasing resource in national forests and should have greater consideration in land-management programs.

Water resources, valuable for fur bearers, waterfowl, and fish are being improved by raising water levels, stream improvement,

and reservoir construction. About 70,000 miles of trout streams and thousands of small lakes furnish suitable environment for fish and water-loving animals. Nearly 651,000,000 fish from State and Federal hatcheries were planted in these waters by Forest Service officers in the 5-year period 1933–37, not to mention even larger numbers planted by other agencies. Fishing probably attracts more people to the national forests than does the big game. Systematic fish-planting plans and long-time programs are being prepared and carried out in the national forests.

The wildlife populations that have reached their optimum numbers must be so managed that the yearly crop is harvested to make way for the new crop, and to insure against overuse of vegetation and soils. In the present highly developed state of our industries, proper management offers the only assurance of wildlife conservation. This wise use can be accomplished by regulating the take of the crop by hunting, fishing, and trapping. To this end the Forest Service is cooperating with State conservation commissions, other Federal bureaus, and other agencies in securing adequate breeding stocks and both quantity and quality of wildlife. Wildlife is a major national-forest resource which must have management controls and be given high priority in land use planning.

Thus it will be seen that public management is not only concerned with producing and utilizing forest products, but that it involves a treatment of broad social and economic problems in which the human factors are dominant. Public forest management should provide the foundation for acceptable ways of life for dependent people, in fact a means of life. This is the paramount objective of national-forest administration.

Aids to Commercial Forest Owners

Of the 462 million acres of commercial forest land in the continental United States, exclusive of Alaska, 341 million acres, or 74 percent, is privately owned. Of the land in private ownership, 41 percent is farm woodland, and the remainder, 59 percent, is owned by saw- and pulp-mill operators, large naval stores operators, investors,

and others not primarily interested in the production of agricultural crops.

Industrial and other large nonfarm ownerships embrace 61 percent of the privately owned timber large enough to furnish sawlogs under present market conditions; 52 percent of forest lands bearing timber of cordwood size; 56 percent of cut-over or burned-over areas which are restocking to timber growth fairly to satisfactorily; and 69 percent of poor to nonrestocking areas.

In addition to having the largest area of commercial forest land, industrialists and private owners other than farmers hold in general the most valuable timber from the standpoint of quality and usually have the best facilities for marketing it.

Of the 202 million acres of private commercial forest land owned by other than farmers, slightly over 50 percent is in the Southern States, 18 in the Northeast, 13 in the Columbia River Basin, and 8 percent is in the Lake States and the balance is scattered through the central region, California, and the southern Rocky Mountains.

The minimum requirements of forest management may be defined as satisfactory fire protection and such cutting practices or simple silvicultural measures as are necessary to maintain production in sufficient quantity for commercial operations. Maximum requirements call for measures necessary to increase or maintain both the quantity and quality of the yield at a point consistent with the productive capacity of the land.

Within the broad limits of this definition and without regard to the degree of forest management practiced in individual cases, California is estimated to lead with about 41 percent of such lands under some sort of management; the Southern States are next with 17; followed by the Columbia River Basin, 12; and the Northeast, 10 percent. The central region is estimated to have the least land under any type of management, less than 3 percent. For the United States as a whole, the estimated total under some degree of management is slightly over 14 percent.

Intensive management in accordance with the maximum requirements as defined, is being practiced on only an estimated 2 percent of the total area.

It is thus apparent that privately owned forest land in general is not under management for continuous production, and that such management as exists is inadequate. Most private forest owners know little of the methods and possibilities of forest-land management. Those who do know are sometimes subjected to economic pressures which discourage good management.

The fundamental purpose of the Department is to keep in forest production all lands best suited to the growing of forests, regardless of ownership. In the case of national forests involving public ownership of large and more or less solidly blocked areas, this looks relatively easy, although wherever a national forest touches privately owned lands it is naturally affected by the policy of the owner or owners of the latter.

Forest lands are subject to certain common problems regardless of ownership. A privately owned tree is just as susceptible to fire, insects, disease, and wind throw as a publicly owned tree. Practices on private forest lands may, and frequently do, vitally affect not only other private forest lands, but also publicly owned forest lands.

It is thus obvious that there is no possibility of carrying out a broad forest policy in the United States, in which each type of ownership is treated as a problem separate from the others. A fence around a national forest cannot be so high or so tight that fire generated by throughtless persons miles away cannot surmount it. From this simple fact has grown the cooperative relationships between public and private agencies under the authorization of the Weeks law (1911) later expanded through the Clarke-McNary Act (1924) resulting in placing in cooperation with 38 States and 1 Territory about 60 percent of the privately owned commercial forest lands under organized fire protection. The area is expanding as more facilities become available.

Latest available statistics for the calendar year 1937 show that in addition to the 139,000,000 acres of federally owned forest land under protection, only 258,000,000 of the 420,000,000 acres of State and privately owned lands needing protection were receiving it. Of the most important timber-producing regions, the Lake

States led with 100-percent coverage, the Pacific coast was second with 99, and the South trailed with slightly over 40 percent.

The effectiveness of protective effort is indicated by the fact that only 0.4 percent of the protected areas burned in 1937 whereas on unprotected areas 11 percent burned.

As against estimated requirements of $18,500,000 to protect adequately the 420,000,000 acres of State and private lands, there was actually spent in 1937 approximately $7,600,000. Under cooperative authority of the Clarke-McNary Act this consisted of approximately $1,500,000 contributed by the Federal Government, $3,600,000 by the States, and $1,300,000 by private land owners. In addition, towns, counties, and private owners expended over $1,000,000.

The Clarke-McNary law is probably the most important single factor employed by the Forest Service in keeping forest lands productive through stimulating fire-protective effort on the part of State and private landowners.

Although fire is spectacular, other factors, sometimes but not always coupled with fire, frequently exert a powerful influence on the productivity of forest land and on the very existence of a considerable portion of the persons directly or indirectly dependent on forest industries for their livelihood. Thus the way in which timber is cut may determine whether the land will continue to furnish timber crops annually or at frequent intervals, or whether it will revert to waste land of no value for farming or any other useful purpose.

It becomes apparent, therefore, that what happens to private commercial forest lands not owned by farmers is a deciding factor in determining whether the public is going to have an abundance of lumber, paper, naval stores, and the multitude of products made from wood, and whether the communities and pay rolls dependent upon forest industry are to continue and increase or whether towns will be abandoned as the timber is improperly removed, leaving populations stranded and the land in such condition that great expense and a long time will be required to bring it back to its only economic use—growing forests.

Fortunately American Forests respond readily to simple and inexpensive treatment, but the extensive area of privately-owned forests, the diversity and number of individual ownerships, the number of tree species and present condition of the land, the existing financial set-ups and obligations, all contribute toward making this a major problem.

In spite of desirable expansion in both National and State forest systems, there will remain a vast acreage of private forest land in other than farm ownership. The responsibility of securing adequate management on such lands lies in the Department working through the Forest Service and in cooperation with State forestry agencies and the forest products industries themselves.

The main approach is twofold: (1) A demonstration of the results of intensive management as exemplified by administration of the national forests, (2) and most effective, the adaptation of results of research to the particular problems of individual and group forest-land owners on the ground. This second approach should be carried out in cooperation with State and other forestry agencies.

No two forest properties are alike and no two forest-land owners are confronted with the same problems. Accordingly, it is necessary to know in each individual case what is now on the land, its condition, its growth, its depletion through fire, insects, cutting, etc., and the current plans of the owner or owners with respect to it before intelligent suggestions can be made. The development of this basic information and its translation into workable management policies is one of the big jobs of the Forest Service.

Of known industrial owners of 5,000 or more acres of commercial forest land, it is estimated that only 8 percent are now handling their lands on a sustained-yield basis—that is, no more timber is being removed than is currently replaced through growth. It is not possible definitely to fix entire responsibility for good management policies on the part of the owners alone. The complexities of the land ownership pattern often require joint action by public and private agencies. As the agency responsible for leadership in promoting the best use of the Nation's forest lands, the Forest Service is working with other Federal, State, and local agencies to

bring about better management of privately owned commercial forest lands. But only a beginning has been made, and accomplishments to date represent only the most favorable situations, that is, those where the advantages of sustained yield are most easily demonstrated.

Regardless of the type of ownership and the problems surrounding it, in most cases it is economically feasible to manage forest properties so as to keep the lands growing timber. Application of such management may result in extending the operating life of present owners or, where liquidation is inevitable, may at least leave the lands in condition for future new forest enterprises.

Where individual owners are unable to practice sustained yield because their holdings are too small, it is sometimes possible to combine two or more ownerships for that purpose. Again, a combination of private and public forest land may develop practicable sustained-yield units.

In addition to individual and group case studies, the Forest Service also approaches the problem of better forest management on commercial forest land through studies and analyses of whole communities, counties, or States to determine the proper place of forests and forest lands in their economy. These sometimes lead to recommendations for better fire control, more equitable taxes on forest lands devoted to continuous production of timber, etc. Through such studies State officials and citizens generally are in a position to act intelligently with reference to their forest resources.

An example of the effectiveness of cooperation with individual timberland owners is the case of a sawmill operator who recently adopted a policy of improved forest management which resulted in placeing some 300,000 acres of neighboring forest land, some 500,000 acres in all, under cooperative fire protection.

An example of group cooperation is furnished by a number of southern pulp mills which recently joined in the establishment of cutting rules to keep not only their own lands productive, but also the lands of others from whom a portion of their pulpwood may be secured. This group has recently set up an organization for the express purpose of making the rules effective.

The ultimate objective is social and economic stability for forest and forest-industry communities, and an adequate supply of forest products to meet expanding requirements. As a means to that end, the immediate objectives are the extension and improvement of forest-fire protection, the institution of better forest practices generally, the establishment of sustained-yield operations where practicable, and the development of better utilization, fabrication, and marketing practices.

In the initial stages, these objectives are being approached by dealing with individual operations and small groups, in cooperation with State forestry officials. By successive steps, whole sections and regions will finally become established on a more permanent and stabilized basis of forest and forest-industry operation.

Farm-Forestry Programs

In many sections of the country the average farm is now considered relatively undesirable, of lower value, and unbalanced for supplying farm needs and protecting steep slopes and light soils if the portions of it which may be suitable are not devoted to a forest crop.

While the amount contributed to the average farm income by the woodland or timber-lot may not be large, it is nevertheless an important factor in the farm economy. In many instances it makes unnecessary a cash outlay for fuel and posts. It yields extra income from off-season work. Over a long period the sum-total income from a woodland may make the difference between profit and loss at the end of the 10, 20, 30, or more years of farm operation.

Slightly less than a third of all our forest land is on farms. Because of their location on relatively high-quality forest sites, comparative nearness to markets, and the relative ease with which they can be given intensive management, farm woodlands are in general potentially capable of producing greater returns than forest lands in other types of ownership.

On the whole, however, the farm woodlands are generally overcut, overgrazed, and so seriously depleted that they are producing at only about one-third of capacity; yet in 1934 these farm forest lands

contributed $62,000,000 in cash to more than 2,500,000 farm families and $54,000,000 worth of such farm-used products as fuel and fence posts. The farm forest returns equalled the combined returns from crops of barley, rye, rice, and flaxseed.

Recognizing the need for a farm-forestry program, Congress passed the Clarke-McNary law in 1924. In addition to authorizing Federal assistance in fire protection on State and privately-owned land, this law authorizes Federal cooperation with States in producing and distributing trees at low cost for woodland, windbreak, and reforestation plantings on farms. It also provides for extension teaching in farm forestry and for investigative work in forest-taxation problems.

Since the passage of the law, 324,988,000 trees have been distributed, of which 41,000,000 were sent out during the calendar year 1937 by 40 cooperating States and 2 Territories. In most States the trees are grown by the State forestry department. Farmers place their orders with their county agents, who forward them to the agency producing and distributing the trees.

Trees supplied through the Clarke-McNary law have been set out principally for windbreak and protective purposes in the Central and Middle-Western States. In the Lake States and the East, they have been used largely for block plantings to produce forest products or to reforest old fields. Recent heavy demand for trees in the South is a result of the desire to grow a tree crop to supplant cotton on hilly, eroded land and on light sandy soils.

The Cooperative Farm Forestry Act passed by Congress in 1937 affords a further means of meeting the expanding need for farm forestry and promises to be of particular aid to the South in its transition to an increasingly important wood-producing region. The act is broad enough to permit Federal cooperation and aid in establishing farm shelterbelts and farm woodlands in order to promote farm security over wide areas of the Nation, and to provide technical help to assist farm-woodland owners in properly planning the management of their woods and to follow sound practices in handling them. Operations on privately owned lands under this program are in charge of the Soil Conserva-

tion Service in areas predominantly agricultural; in areas where farming is incidental to forestry the Forest Service is in charge.

The Forest Service administers the Prairie States forestry project, which was originally initiated as the shelterbelt project under an Executive order of the President in 1934, following the spectacular dust storms of that spring. More than 200,000 farm families live in that portion of North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, and the Texas Panhandle, where protective plantings of trees are badly needed and where trees can be successfully established. Since there was no appropriation under the Cooperative Farm Forestry Act for 1938 or 1939, the shelterbelt plantings have been continued with emergency funds as a relief project. Establishing the plantings is a cooperative undertaking. Farmers contribute labor and fencing, and cultivate the land. The Forest Service selects the site and directs W. P. A. laborers who produce and plant the trees and build the fences.

To date, the Prairie States forestry project has planted more than 84,000,000 trees in 6,857 miles of shelterbelts to protect 2,000,000 acres of crops and soils on 13,810 farms. Eventually, as much as 4 percent of the favorable soils in the prairie region, or about 6,500,000 acres, could be planted to shelterbelts and woodlands with great benefit to the area.

In most sections of the Nation, the dominant purpose of the farm-forestry program is to bring proper management to the 88 percent of farm-owned forest lands now in productive condition. Such management is needed on all woodlands in order that profitable crops of timber may better supplement farm incomes.

The new forest-products marketing cooperatives which are in various stages of development in several areas are aiding farmers not only in better management of their woodlands, but promise to aid in disposing of the forest crops. The Forest Service cooperates with State agencies in furnishing necessary technical aid to such organizations for making inventories to determine allowable cuts and to furnish information helpful to successful operation.

The Flood Control Act of June 22, 1936, is the enabling legislation that establishes national flood-control policies. This act authorizes a coordinated land and water program for flood control, charging the War Department with the responsibility for improving rivers and waterways and the Department of Agriculture with responsibility for undertaking works and measures for run-off and water-flow retardation and soil-erosion prevention on the flood-producing watersheds of these rivers. Subsequent amendments to the basic act have reiterated this principle.

Many of the measures employed on land in aid of flood control are very similar to those used to control soil erosion. Rapid run-off, the cause of floods, is also the primary cause of soil erosion, and therefore, with respect to operations on the land, the technical approach to the problem of flood control is usually similar to the technical approach to the problem of soil conservation.

The distinction between the two programs is mainly one of purpose. In the erosion-control program, flood-control benefits, though important, are incidental. The primary purpose is to promote better use of land and better tillage practices in order to maintain a permanent agriculture. In the flood-control program projects are chosen to help control floods and protect existing values downstream. Though soil conservation is accomplished, this benefit, though important, is incidental. In fact, benefits from flood-control measures on land cannot be realized without holding the soil in place. Land measures are necessary not only to hold water from directly entering the streams, but to withhold soil from stream channels. Otherwise stream channels will continue to shoal and reservoirs continue to fill too rapidly with silt, increasing flood hazards and lessening the values of flood-control works on the streams.

In the program authorized by the Congress the Department was directed as a first step to make preliminary examinations and surveys of designated watersheds. These watersheds comprise the major drainage basins of the United States. The purpose of the

preliminary examination is to locate flood-source areas, and to determine the run-off and soil-stabilization measures necessary to prevent flood flows from flood-source tributaries. The preliminary examinations are carried only far enough to discover whether the erosion and flood-control problem is sufficiently serious, apart from purely land use and agricultural considerations, to warrant public assumption of responsibility for control, to determine whether watershed treatment would make an effective contribution to flood control, and to determine whether the benefits from control would likely exceed costs.

When the preliminary examinations recommend further studies special surveys are made to determine the broad outlines of the control program, its costs, and its benefits. After the plans are examined by the Secretary of Agriculture for technical adequacy and approved, they are submitted to the President, who designates the urgency of the projects and correlates the watershed program with the structural program of the War Department.

The special surveys reveal the extent of the problem and the nature of the necessary measures. They also reveal the areas within the watershed which, because of their present condition and use, contribute run-off most rapidly and the most silt. The boundaries of these critical areas are delineated. Only rarely will it be necessary to treat the whole of a large watershed with an equal degree of intensity. Treatment will be limited usually to the watersheds of the troublesome tributaries.

The Congress in 1938 appropriated a small amount of money to begin operations on a watershed-control program. Up to that time work authorized had been limited to surveys. The appropriation is large enough to permit application of beneficial measures to only a few of the flood-producing watersheds of the United States. To make the best use of available funds they must be expended where the problem is most serious and where the chances for effecting control are greatest.

The Soil Conservation Service is the agency that will undertake to help farmers, ranchers, and other private land users apply flood-control measures to their lands in flood-control-project areas,

usually through cooperation with soil conservation districts or other local government units. The Forest Service will handle projects on public forested lands, usually within national forests.

In the 1937 amendments to the Flood Control Act of 1936, Congress authorized the Secretary of Agriculture to require the enactment of laws providing suitable safeguards for local cooperation in the flood-control program as a condition to extending benefits to any State.

Immediate preference will be given, in carrying on operations on watersheds in aid of flood control on private lands, to areas within soil conservation districts.

Wildlife Refuges

Wildlife flourished on the North American Continent until the white settlers began to appropriate its native ranges. Although the aborigines lived principally on fish, game, and uncultivated native plants, they never caused any permanent injury to the resource. This was because the simple agricultural operations of the Indians did not influence natural water levels and did not change nor destroy the natural vegetation that provided food and cover for the wild creatures and also protected the soil. The white race, impelled by the necessity to increase food supplies for the support of a much larger population, began at once the exploitation of the soil, with results disastrous to wildlife and in many instances to the human population as well.

The wildlife-restoration program administered by the Bureau of Biological Survey [1] takes into account the obvious fact that not all forms of wildlife can ever by any possible means be restored to primitive abundance. It does assume, however, that the resource can be greatly increased beyond the existing supply by the application of a sound policy of land utilization.

The greatest need of American wildlife today is for land. Recognizing the fact that the major use of land in our present economy is agricultural, the Bureau of Biological Survey stresses also the

[1] Transfer of Bureau of Biological Survey to Department of Interior under Reorganization Plan No. 2 effective July 1, 1939.

fact that the establishment of national wildlife refuges need not interfere with agricultural development. Any successful wildlife-restoration program is fundamentally one of land utilization.

Fortunately, through the cooperation of officials and organizations concerned with land-use planning, it has been possible in the Government's purchase of submarginal lands to make provision for wildlife. When some other use of acquired lands is not primary, the Biological Survey attempts to see that wildlife restoration is recognized as either the primary or a secondary, but still important, use, and that when appropriate for the purpose they are restored as wildlife refuges.

The existing national wildlife refuges fall into three general classes: (1) Waterfowl or general wildlife refuges; (2) big-game refuges, preserves, or ranges; (3) colonial nongame bird refuges, or rookeries.

At the present time some 11,500,000 acres of land have been devoted by one means or another to the purpose of increasing valuable forms of wildlife. A major part of this total acreage is made up of lands that are submarginal in character. On much of it agricultural enterprises have been undertaken in the past, with little or no success but with definite injury to the soil and its protective covering. Drainage operations have damaged water levels not only locally but over wide areas of adjacent land. Soil erosion has occurred also as a direct result of this misuse. Many other evils of which we now complain spring from the same cause. Although the work of improving and restoring the areas now included in the Biological Survey's projects is still far from complete, it has progressed far enough to indicate that the policy is sound and feasible.

When an area has been acquired, the administrator's first concern generally is to repair the natural hydraulic system and restore the original water levels. This is in line with the efforts of every agency, Federal or otherwise, engaged in the conservation of the organic resources of the land—the soil itself and all its products. It represents a complete reversal of an earlier determination to get water off the land as completely and as expeditiously as possible.

Hydraulic engineers are now concerned with finding means to keep water on the land and retard the run-off and drainage.

Following the restoration of the water resources of an area an effort is made to regenerate the original vegetative cover. Where the vegetation has disappeared the area is replanted, and in many instances additional food and cover plants are introduced. Much of this vegetation is of types that do not require a highly fertile soil. Many plant species that are valuable as soil binders, and also supply food and cover for wildlife, can be grown upon land too poor to yield a profit from any agricultural crop.

It will be noted that the operations just described are identical with the practices recommended by the Soil Conservation Service for projects having to do with the restoration of submarginal lands and the prevention of erosion. There are few, if any, instances where the work of soil conservation has not produced conditions highly beneficial to the various forms of wildlife; and there is no single instance where the Biological Survey in carrying out the waterfowl-restoration program has failed to promote the soil-conservation program as well as its own.

While the Survey cannot ignore any opportunity to obtain large areas for restoration, preferably those that have been drained, it is none the less interested in regenerating any area, large or small, particularly in the North Central States. The Survey has received a great deal of cooperation from various Federal agencies and from some State agencies in improving small water-restoration areas. The Soil Conservation Service has built hundreds of small reservoirs and ponds; others have been built by the Forest Service and the Interior Department's Grazing Division; and the Biological Survey itself has constructed a great many. Where these can be fenced and protected from livestock trampling, every small reservoir and dam becomes a fine duck-nesting area, and every little pool produces one or more broods of birds. It seems to be a good practice to fence these ponds and allow the stock to drink from troughs, or to fence lanes into the water, rather than needlessly to allow the destruction of the vegetation.

The "easement" refuges represent an interesting development

in the Great Plains drought area. Here the Biological Survey has obtained from the farmers permanent easements that give the Bureau the right to flood the land and maintain each area as a migratory waterfowl refuge. In return for that the Survey does the work of restoring the water level and in most cases allows stock access to the water by one means or another. In the Dakotas and Montana some 135,000 acres of land have thus been obtained, and the restoration of water levels is well under way. It is one way of enabling the Government to develop minor wildlife areas at low cost.

It is estimated that about 7,500,000 acres of marshland, properly distributed throughout the breeding and wintering grounds in the United States, are needed to meet the minimum essential requirements of the migratory waterfowl. At the present time about 3,000,000 acres are required to complete this part of the Survey's program.

The Survey believes that the principal and perhaps the only Federal responsibility toward nonmigratory and big-game species is to provide, within their natural ranges, Federal refuges for seed stock for every major North American wildlife species. From these reserves stocks may be drawn to restore the species in sections from which they have been extirpated. With the addition of three areas now under consideration, and a few others in the West for more specialized purposes, the big-game problem in the regions will be less urgent. In the Mississippi Valley there is no Federal big-game preserve, and it is desirable that the native ecological types be protected by restoring habitat and stock in at least one or two places.

The Pittman-Robertson Act, passed by the Seventy-fifth Congress, will in time have much influence in solving land-utilization problems in ways beneficial to wildlife, to forestry, and to soil and water conservation. The act, also known by the descriptive title "Federal Aid to Wildlife Restoration Act," authorizes the appropriation annually of funds equal to the sums received from the 10-percent excise on arms and ammunition which is to be used in accordance with other provisions of the law. This amounts to about $3,000,000 each year.

The act provides for the allotment of these funds to the State game departments to assist in the development of wildlife-restoration projects. These projects must have the approval of the Secretary of Agriculture before Federal aid can be given, and the participating States must contribute 25 percent of the total cost of the work. The act is so drawn as to encourage the development of plans involving research work and particularly the acquisition, reclamation, and improvement of lands by the States. Provided that the appropriations are made as authorized, it is evident that over a period of years this legislation will have very great effectiveness in achieving the objectives of the land-utilization program. It will have application particularly to desirable smaller areas of submarginal and wilderness lands which, because of their limited acreages, are difficult to acquire and too expensive to permit of direct administration by the Biological Survey.

Road Building and Land Use

It is almost self-evident that highway transportation is closely associated with the use of land. In many areas, the highway offers the only means of transportation, while in others it is a very important, if not the essential link with other forms of transportation. Consequently, highway development should be closely coordinated with programs for proper land utilization. Highways intended to serve primarily agricultural needs should not be developed in areas which are going out of agriculture or which should be withdrawn from agriculture. Conversely, the highway program may be used in conjunction with other appropriate measures, such as land acquisition, rural zoning, etc., to induce proper use of land: Through the withholding of highway improvements in areas unsuitable for agriculture, and by assisting the development of true agricultural communities through the provision of favorable highway facilities, it is possible to discourage continued use of submarginal lands and to further in no small degree the program of agricultural readjustment.

The Department's[2] highway program has been developed to keep pace with the changing conditions of a transitionary period of remarkable transportation development. It may be broadly described as covering three periods, differentiated by the methods used in selecting highway projects.

The first period began in 1893. During the late eighties, the National Grange and the League of American Wheelmen had stirred up sufficient interest in highways to bring about the establishment by Congress of a new office in the Department, the United States Office of Road Inquiry. The Office of Road Inquiry studied road-building materials and methods, published reports, and built object-lesson roads, often in cooperation with land-grant colleges as a phase of the Federal aid granted to such institutions by the Morrill Act.

Before the end of this period, the American automobile industry had begun its phenomenal growth. By 1916 the demands of automobile owners for roads on which they could make longer trips had become a powerful pressure, and rural landowners were urgently demanding better roads to markets.

In 1916 the Federal Aid Road Act was passed. In addition to granting Federal aid, it provided for the organization of State highway departments. It did not, however, prevent expenditure of the appropriations made under it on many disconnected projects. During the next 5 years, which included the World War and a tremendous increase in agricultural production and in highway transport, the need for development of a highway system became urgent.

The Highway Act of 1921 provided for the next logical step—the concentration of Federal-aid expenditures on through roads and trunk lines not exceeding 7 percent of the road mileage in any State. It immediately became obvious that the first essential in developing a system of highways was a framework upon which the structure could be built, and thus began the period of selection. It was not difficult for the States to select the most important

[2] Transfer of Bureau of Public Roads to Federal Works Agency under Reorganization Plan No. 1 effective July 1, 1939.

through routes; an intelligent study of the map was all that was required.

As the task of connecting all the States and their important centers was carried forward, other economic changes appeared on the horizon. One of these was widespread hand-to-mouth buying, which rapidly replaced the old system wherein business houses had carried large stocks. As new highways augmented the transportation net, other marketing practices changed also. Rural landowners—as for example, cotton growers operating trucks—could hold their crops for a favorable price and still get them to market in time to realize a suitable return. The farmer's neighborhood grew larger, as did the area in which he could market his crop, and the more he enjoyed the benefit of roads, the more urgent became his demand for extension of Federal aid to so-called farm-to-market roads.

By 1935, the Federal highway system was practically complete in its first development. Every important center in the country had been tied into the net, which in the more prosperous and densely populated States had been woven closer with State roads. The pressure from rural landowners for better roads to market was still increasing. The necessity for relief for unemployment growing out of the depression required the expenditure of Federal funds, and provision was made, for the first time, through the Hayden-Cartwright Act, for expenditures from such funds on secondary roads. The selection was to be made from 2 million miles of local roads. Little was known as to the condition of these local roads, and it was apparent that a thorough fact-finding survey would have to be conducted before it would be possible to select from this vast mileage the roads which should be added to the State highway systems. This necessity had been recognized by the Congress in the Hayden-Cartwright Act of 1934, which authorized the use of 1½ percent of the Federal-aid highway funds for such surveys. Under this provision, the highway departments of 43 States are now cooperating with the Bureau of Public Roads in a series of comprehensive State-wide highway planning surveys.

Other reasons existed also for the State-wide highway-planning

surveys, which began in 1935 and opened the period of scientific selection. The volume and type of highway traffic had been changing since 1921. Vehicles were heavier and faster, and there were a great many more of them. Highways satisfactory for the speeds of 15 years ago are hazardous today, and there is consequently the problem of reconstructing and modernizing a large mileage of the primary system. In the consideration of a secondary system, therefore, one of the most important problems is the financial problem. A determination must be made of the total amount necessary to improve a logical and needed mileage of local roads, and at the same time to protect the investment already made in the primary system.

It is in the selection of the secondary or local road system that the Department's highway program can be of greatest assistance to, and receive the greatest benefit from, other land-use programs of the Department.

140776° U. S. GOVERNMENT PRINTING OFFICE: 1939

613